MEMOREX

2087 Matrix Printer User's Guide

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User's Guide

2087.02-00

WARNING

This equipment generates and uses radio frequency energy and if not used properly, i.e., in strict accordance with its operating instructions, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when Class A equipment is operated in a commercial environment.

Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to correct the interference.

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How to Use This Manual

This manual is designed to guide you through all the procedures you'll need to install and operate the Memorex 2087 Matrix Printer. If you are setting up your printer for the first time, be sure to read the sections in sequence. Once you are familiar with the operations of the 2087 printer, it is recommended that you review the Pre-Print Checklist in Section 4 before printing any job, just to be sure that your printer is properly setup.

Here is a brief description of the information found in each section:

Section 1 Pre-Installation Check
Read this section when you first receive your printer. It tells you how to spot signs of damage that may have occurred during shipping. It also tells you how to make sure your facilities are properly equipped for the printer.

Section 2 Printer Features Overview
Tells you what controller model numbers are compatible with the 2087 printer. Introduces you to the standard and special features available with the 2087 and gives a general description of some of the feature highlights.

Section 3 Guided Tour of Printer Parts
Helps you quickly become familiar with the names and locations of the parts of your printer before you begin the installation procedures.

Section 4 Getting Ready to Print
Includes a handy checklist you can refer to before printing a job to make sure your printer is properly set up.

The sections of this manual that describe the necessary setup procedures are:

Section 5 How to Load and Change the Ribbon
Illustrates proper way to insert and remove the ribbon cassette and tells you what kind of ribbon to use.

Section 6 How to Load the Paper
Provides step-by-step procedures for loading the paper. Also gives directions on how to install the paper guide rack.

Section 7 Power-On Sequence and Test
Describes how to turn the printer on and what happens when you do. Explains the automatic Self-Test and how to determine if it ran successfully.

Section 8 Connecting the 2087 to a Controller
Explains how to attach the coaxial cable to the printer. Includes a diagram showing the various controller models that may be attached to the other end of the cable.

Once you have performed the initial set-up procedures, you will mainly be concerned about the printing functions you can control and what to do if you have a problem with your printer. You will find this information in the following sections:

Section 9 How to Operate the Printer
Explains each switch and light on the operator control panel, its purpose and how to use it. Includes explanations for the audible alarm and the status indicator.

Section 10 What to Do if You Have a Printer Problem
Lists the possible problems that may occur and the action you should take. Many times it is an operational problem (one that you can fix yourself) and there are instructions on how to do this. If you need help from your Memorex Customer Engineer, the toll-free assistance Hotline numbers are listed in this section.

The four Appendixes contain information that you normally will not have to refer to very often.

Appendix A 2087 Operational Status Codes
Lists the possible operational status codes that may be displayed on the Status Indicator when your attention is required. The meaning of each code is explained.

Appendix B Preventive Maintenance Procedures for the 2087
Gives instructions on how to perform some simple periodic procedures that will help keep your 2087 Printer in good working order.

Appendix C How to Install the Optional Printer Stand
Explains how to assemble the optional printer stand.

Appendix D Paper Specifications
Lists detailed specifications you should refer to when selecting paper or forms for your particular printing job.

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Pre-Installation Check 1

Check the Printer for Shipping Damage

Inspect the printer for signs of shipping damage. Look for dents, scratches, cracks, broken switches, or other broken parts. Listen for rattles as you move the printer around. The printer weighs 27.2 kg. (60 lbs.); do not try to lift the printer by yourself.Two people should always lift or move the printer.

Notify the delivery company immediately if you find any signs of damage.

CAUTION

Any attempt to operate a damaged printer may cause further damage and can void the warranty.

Check Your Facilities

Make sure that the location you have chosen for installing your printer has all of the following equipment available:

Primary Power Outlet

One standard three-prong grounded power outlet or optional locking three-prong grounded power outlet per printer.

Coaxial Cable

One type RG 62A/U single coaxial cable with type BNC UG260 B/U coaxial connector. Make sure the coaxial cable from the controller to the printer does not exceed 1500 meters (4920 feet).

Table or Optional Printer Stand

A table or optional print stand for each printer. Make sure the location for the table or stand allows enough room for ventilation, hookup of the coaxial cable, paper handling, user work area, and room for any other equipment you plan to use with the printer.

Printer Features Overview

2

The Memorex 2087 Matrix Printer is a compact desk-top printer that is functionally interchangeable with the IBM 3287 Model 2 and is compatible with the 3270 family. It can be connected via coaxial "Category A" interface to any of the following control units:

Memorex 2076 Remote Cluster Controller (Remote attachment)
IBM 3274 Controller (Local or remote attachment)
IBM 3276 Controller (Remote attachment)
IBM 4341 Processor (Direct attachment)
IBM 4331 Processor (Display/Printer Adapter)

Figure 2-1 shows the possible ways to attach the 2087 Printer to a system.

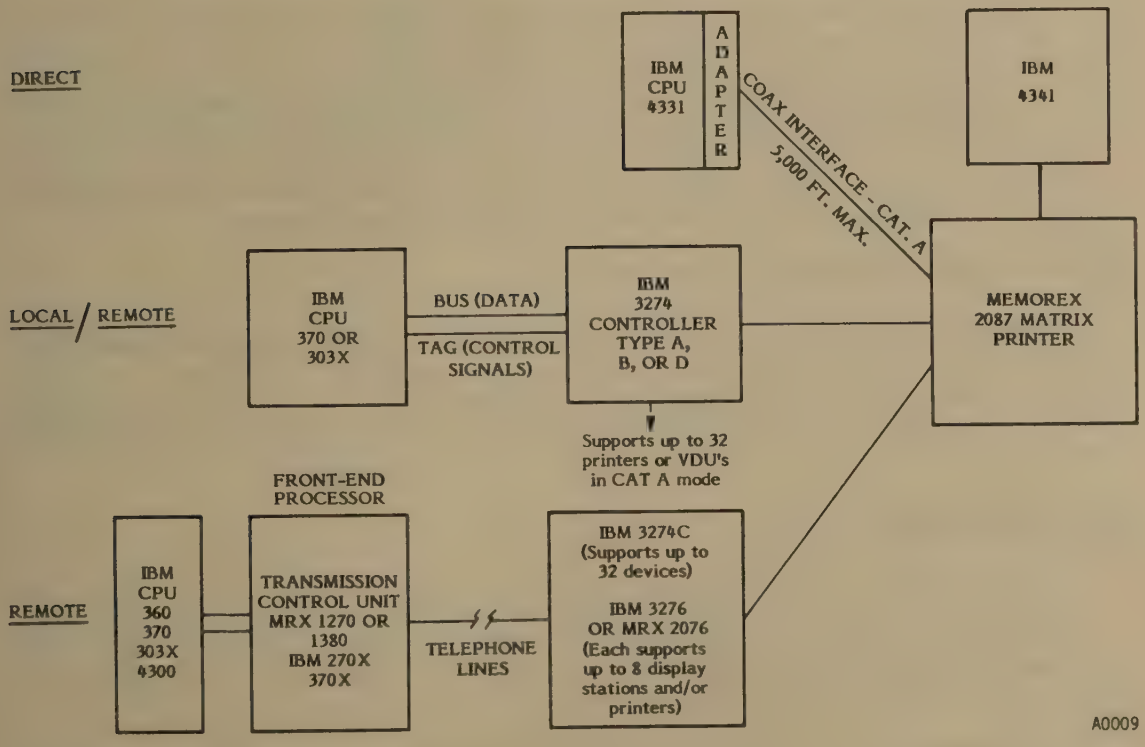

DIRECT
IBM CPU 4331
ADAPTER
COAX INTERFACE - CAT. A
5,000 FT. MAX.
IBM 4341
LOCAL / REMOTE
IBM CPU 370 OR 303X
BUS (DATA)
TAG (CONTROL SIGNALS)
IBM 3274 CONTROLLER TYPE A, B, OR D
MEMOREX 2087 MATRIX PRINTER
Supports up to 32 printers or VDU's in CAT A mode
FRONT-END PROCESSOR
REMOTE
IBM CPU 360 370 303X 4300
TRANSMISSION CONTROL UNIT MRX 1270 OR 1380 IBM 270X 370X
TELEPHONE LINES
IBM 3274C (Supports up to 32 devices)
IBM 3276 OR MRX 2076 (Each supports up to 8 display stations and/or printers)
A0009

Figure 2-1. 2087 Configurations (Category A Interface)

Standard Features

The standard features of the 2087 Matrix Printer that make it so cost-effective and efficient to use are listed below. Following this list is a description of other standard features that allow the operator to control the printing process and to set and change various format parameters.

- Microprocessor-based design for reliability
- Bidirectional printing at 180 characters per second
- Membrane switch operator control panel provides the operator with local control and printer status
- Multipart forms up to 5 carbon copies
- Long-life ribbon cassette (7 million characters)
- Power-on Self-Test automatically checks the basic machine functions
- Variable width tractor feed maintains precise registration of continuous form fan fold paper, single-part or multipart, of various lengths and widths
- End-of-Forms sensor stops the printing when the printer runs out of paper
- Audible alarm with volume control sounds when printer runs out of paper or when an error condition occurs that requires operator attention
- Status Indicator displays 3-digit, easy to remember codes for monitoring current format settings, error codes, selected test numbers, and operational status codes
- 960/1920K-character print buffer (Optional print buffer sizes include 2560K, 3440K, and 3564K and should be specified at the time your printer is ordered)
- 7 by 8 dot matrix plus underline
- Acoustic cover absorbs noise from the interior of the printer, as well as along the paper path
- 12-foot power cord (the optional locking 12-foot power cord should be specified at the time your printer is ordered)

User-Selectable Features

The operator control panel on the front of the printer consists of switches, lights and a status indicator that allows you to control and monitor the printing process and set various format parameters. To give you an idea of the many printer functions you can control, this section lists and briefly describes these functions.

Detailed explanations of how to use all of the control features described below are detailed in Section 9, "How to Operate the 2087 Printer".

Page Length

Upon power-up, the printer is set to print 66 lines per page, which is standard for 8-1/2 by 11 inch paper at 6 lines per vertical inch. You can select a 3-digit page length of 001 to nnn lines. Refer to the PAGE LENGTH switch description in Section 9 for detailed instructions on how to set the page length.

Line Length

The line length default setting at power-up is 132 characters. You can select a line length of 001 to 132 character positions (including spaces). The 2087 prints 10 characters to the inch. Refer to the LINE LENGTH switch description in Section 9 for detailed instructions on how to set the line length.

Top and Bottom Margins

You can set the top and bottom margins so that printing will begin and end on the lines you select. The printer is automatically set to start printing on line 1 and end on line 66. Refer to the TEST switch description in Section 9 for detailed instructions on how to set the top and bottom margins.

Lines Per Inch

You can select 6 or 8 as the number of lines to be printed per inch. And, because you can also select single or double spacing, you can vary the number of lines per inch to be 3 (select 6 lines per inch, double-spaced), or 4 lines per inch (select 8 lines per inch, double-spaced). The printer is automatically set at 6 lines per inch, single-spaced. Refer to the 6 LPI switch and the 8 LPI switch descriptions in Section 9 for detailed instructions on how to set the number of lines per inch.

Form Feed and Line Feed

While the printer is in the Hold Print mode (not printing), you can advance the paper to the next top-of-form, depending on the page length setting, by using the FORM FEED switch. You can also advance the form by one line, using the LINE FEED switch. Both switches are described in Section 9.

Stop/Start Printing

You can stop the printing in process with the HOLD PRINT switch and then restart the printing with the ENABLE PRINT switch. These switches are described in Section 9.

Forms Alignment

While the printer is in operation, you can move the paper up or down using the INDEX UP and INDEX DOWN switches. This feature allows you to easily align preprinted forms, as described in Section 9.

Monitor Status

You can check the status of the printer by reading the Status Indicator, which displays current format settings, status codes, and error codes. Appendix A lists the operational status codes that may be displayed during normal operation of the printer.

SCS Feature (Model 21)

If your printer is equipped with the SCS (SNA Character String) function, your printer can operate in either SCS mode or non-SCS mode. SCS mode is indicated by the SCS light on the operator control panel being on. The format settings for the printer depend on which mode the printer is operating in, as follows:

- If the printer is operating in SCS mode, the switches for changing page length, line length and lines per inch are operational until overridden by the formatting codes sent by the host processor.
- Under control of the host computer application program, the printing format is defined by the SCS format control codes.
- In SCS mode, the printer always prints in dual case (upper and lower case).
- In SCS mode, the forms advance only as specified by the host computer or controller.
- If no value is specified for the SCS format setting functions, the 2087 printer assumes the default values or the values selected by the operator.
- In SCS mode, the following switches on the operator control panel are active: the Program Attention switches (PA1 and PA2) and the CANCEL PRINT switch.

APL/Text Feature (Model 2 and Model 21)

The APL (A Programming Language)/Text is an optional feature available in SCS and non-SCS mode.

Superscript and subscript for scientific notation and footnotes are available with the APL/Text feature.

Guided Tour of Printer Parts 3

Before you begin the installation procedures, this guided tour will help you become familiar with the names and locations of the various parts and controls of the 2087 printer.

Notice that the pictures in this guided tour show the paper and ribbon cassette already installed. You will learn how to load the paper and install the ribbon cassette in later sections.

1. Start the tour with the front of the printer facing you. Use Figure 3-1 to locate the following parts on your printer:

   ⓐ Acoustic Cover
   ⓑ Operator Control Panel
   ⓒ Indicator Lights
   ⓓ Control Switches
   ⓔ Status Indicator

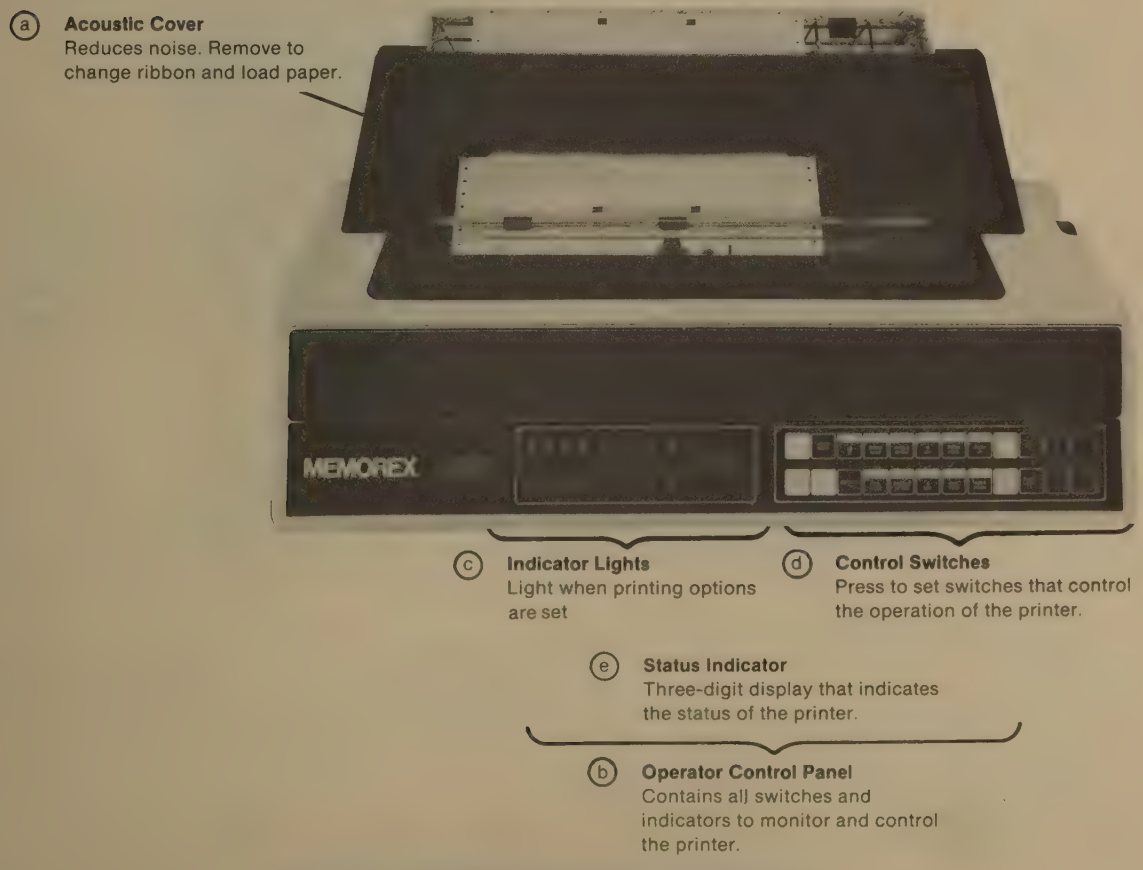

ⓐ Acoustic Cover
Reduces noise. Remove to change ribbon and load paper.
MEMOREX
ⓒ Indicator Lights
Light when printing options are set
ⓓ Control Switches
Press to set switches that control the operation of the printer.
ⓔ Status Indicator
Three-digit display that indicates the status of the printer.
ⓑ Operator Control Panel
Contains all switches and indicators to monitor and control the printer.

Figure 3-1. 2087 Printer with Acoustic Cover

2. Remove the acoustic cover (just lift straight up and off) and use Figure 3-2 to locate the following parts on your printer:

   ⓐ Tractor Assembly
   ⓑ Paper Guides
   ⓒ Paper Guide Rack (You will install)
   ⓓ Paper Rack
   ⓔ Paper Tensioner
   ⓕ Platen Knob

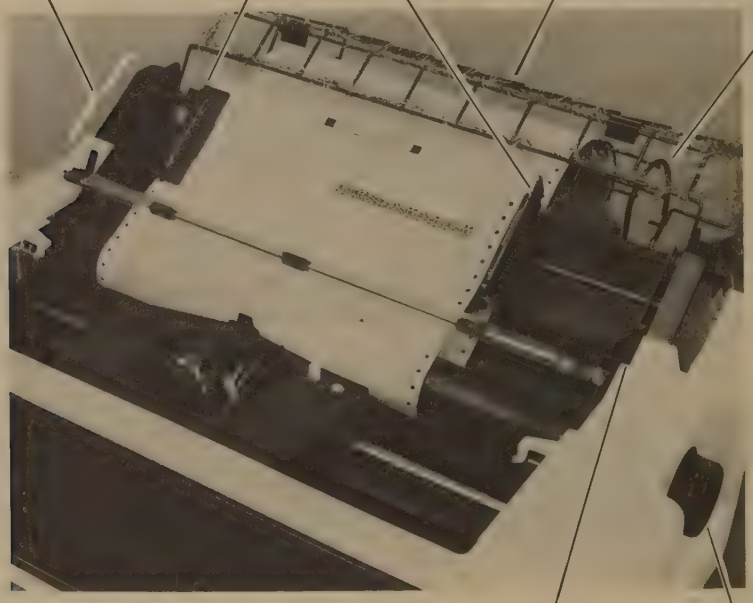

ⓐ Tractor Assembly
Paper guides, paper rack and paper tensioner as a unit.
ⓑ Paper Guides
Pins inside advance paper. Open guides to insert paper.
ⓒ Paper Guide Rack
Guides paper as it is fed out of the printer. The rack is mounted in the four holes.
ⓓ Paper Rack
Guides paper under tractor assembly as it is fed under platen (rear feed).
ⓔ Paper Tensioner
Tilts the tractor assembly back and forth to adjust the paper tension.
ⓕ Platen Knob
Press and turn clockwise to adjust the position of the paper.

Figure 3-2. 2087 Printer without Acoustic Cover

3. Continue your tour by identifying the parts and controls inside your printer as labelled in Figure 3-3.

ⓐ Platen
ⓑ Penetration Control Knob
ⓒ Ribbon Cassette (You will install)
ⓓ Carriage Arms
ⓔ Timing Fence
ⓕ End-of Print (EOP) Sensor
ⓖ Print Head
ⓗ Ready-to-Print (RTP) Sensor

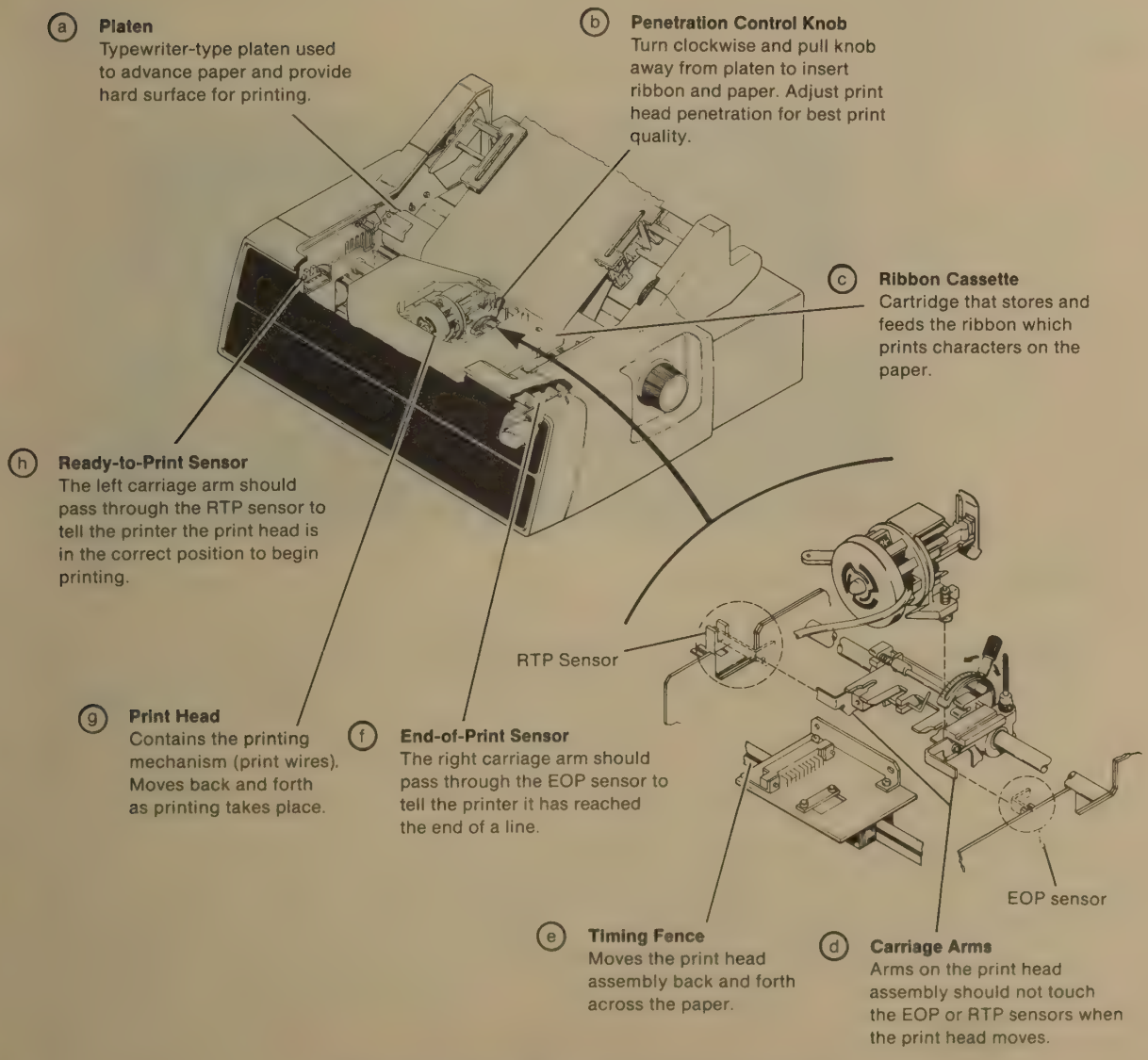

ⓐ Platen
Typewriter-type platen used to advance paper and provide hard surface for printing.
ⓑ Penetration Control Knob
Turn clockwise and pull knob away from platen to insert ribbon and paper. Adjust print head penetration for best print quality.
ⓒ Ribbon Cassette
Cartridge that stores and feeds the ribbon which prints characters on the paper.
ⓗ Ready-to-Print Sensor
The left carriage arm should pass through the RTP sensor to tell the printer the print head is in the correct position to begin printing.
RTP Sensor
ⓖ Print Head
Contains the printing mechanism (print wires). Moves back and forth as printing takes place.
ⓕ End-of-Print Sensor
The right carriage arm should pass through the EOP sensor to tell the printer it has reached the end of a line.
EOP sensor
ⓔ Timing Fence
Moves the print head assembly back and forth across the paper.
ⓓ Carriage Arms
Arms on the print head assembly should not touch the EOP or RTP sensors when the print head moves.

Figure 3-3. Parts and Controls Inside the Printer

4. Examine the rear panel of your printer and use Figure 3-4 to locate:

   ⓐ Audible Alarm Volume Control Knob
   ⓑ Coaxial Cable Connector
   ⓒ Power ON/OFF Switch
   ⓓ Power Cord

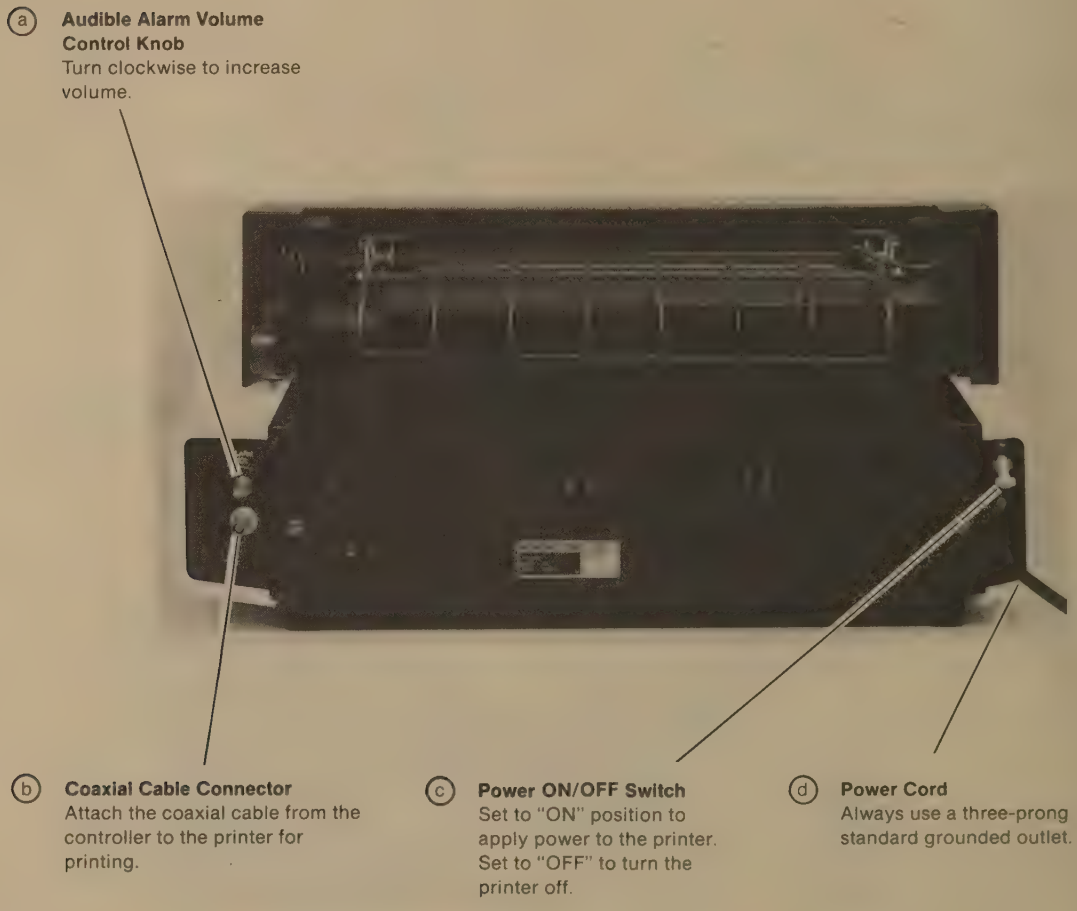

ⓐ Audible Alarm Volume Control Knob
Turn clockwise to increase volume.
ⓑ Coaxial Cable Connector
Attach the coaxial cable from the controller to the printer for printing.
ⓒ Power ON/OFF Switch
Set to "ON" position to apply power to the printer. Set to "OFF" to turn the printer off.
ⓓ Power Cord
Always use a three-prong standard grounded outlet.

Figure 3-4. 2087 Printer Rear View

Getting Ready to Print 4

This section lists the procedures you must perform to get your printer ready to print. The Pre-Print Checklist is a list of questions you should ask yourself before you print any job. If you answer NO to any of the questions, go to the section of this manual that describes the procedure you need to perform and follow it step-by-step.

Pre-Print Checklist

1. Is the printer power cord plugged securely into a power outlet?
2. Is a good ribbon cassette installed?
3. Is the paper or multipart part form loaded properly for the job you are going to print?
4. Do you have enough paper for the job you are going to print?
5. Is the penetration control knob properly adjusted for the paper in the printer?
6. Is the POWER ON/OFF switch in the ON position?
7. Is the coaxial cable securely connected to the printer?
8. Are the READY and CU SIGNAL lights on?

Checking the Print Head Movement

The print head should move smoothly and freely from one side of the printer to the other. Before operating the printer, you can check the print head movement by performing the following steps:

1. Turn the POWER ON/OFF switch to OFF.
2. Grasp the print head as shown in Figure 4-1 and move it back and forth.
3. As you move the print head back and forth, the carriage arms should pass through the Ready-to-Print (RTP) sensor and the End-of-Print (EOP) sensor without touching.

If the print head does not move freely on its track or if the carriage arms come in contact with the RTP or EOP sensors, do not attempt to operate the printer. Go to Section 10, "What to Do if You Have a Printer Problem."

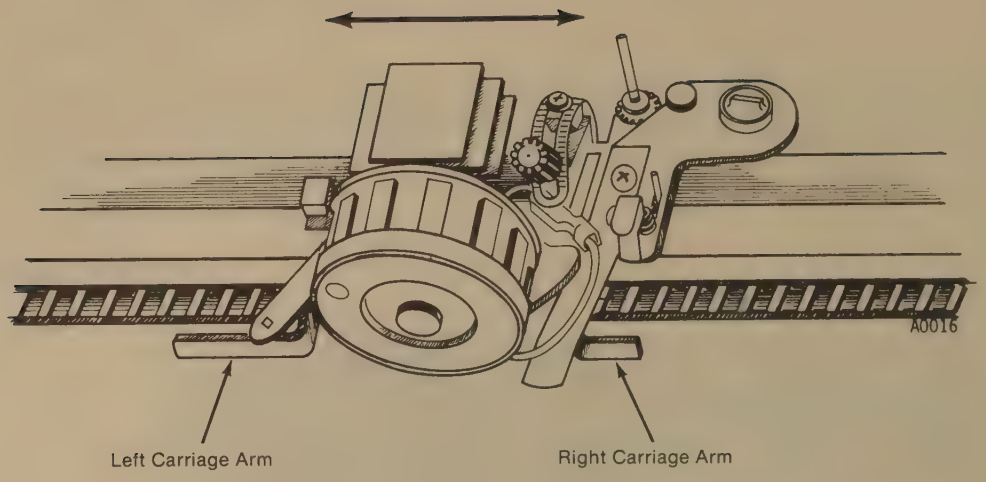


Figure 4-1. Moving the Print Head

How to Load and Change the Ribbon 5

The 2087 Matrix Printer uses a convenient 70-yard ribbon cassette. The ribbon cassette prints up to 7 million characters. Even in the most demanding work environments the cassette seldom needs changing. To order ribbon cassettes from Memorex, refer to the following part number: 613023 (12 cassettes per carton, black-inked nylon).

Loading the Ribbon

The ribbon cassette and paper guide rack were not installed before shipping. This section describes how to load the ribbon cassette; Section 6, "How to Load the Paper" explains how to install the paper guide rack.

The ribbon cassette comes with a ribbon cassette shield. The shield, when properly installed, makes paper loading easier and eliminates possible paper jams. Installation of the shield is required when setting up a new printer and is recommended when replacing a used cassette.

1. To install the ribbon cassette shield, follow these steps:

   a. Refer to Figure 5-1 and place the ribbon cassette shield onto the front of the cassette with the round edge down.

   b. Locate the seam between the top and bottom of the cassette. Place the shield onto the cassette so that the notch on the top of the shield aligns with the seam. The shield should bow outward slightly, if properly installed.

   c. Remove the sticky back tape from the shield and attach the shield to the cassette. Press firmly along the shield to make sure the shield is securely attached to the cassette.

CAUTION

Whenever you insert or remove the ribbon cassette or touch the print head, make sure the printer cannot print during this time. If printing is going on when you need to change the ribbon, press the HOLD PRINT switch to interrupt the printing. Otherwise, just turn the POWER ON/OFF switch to OFF.

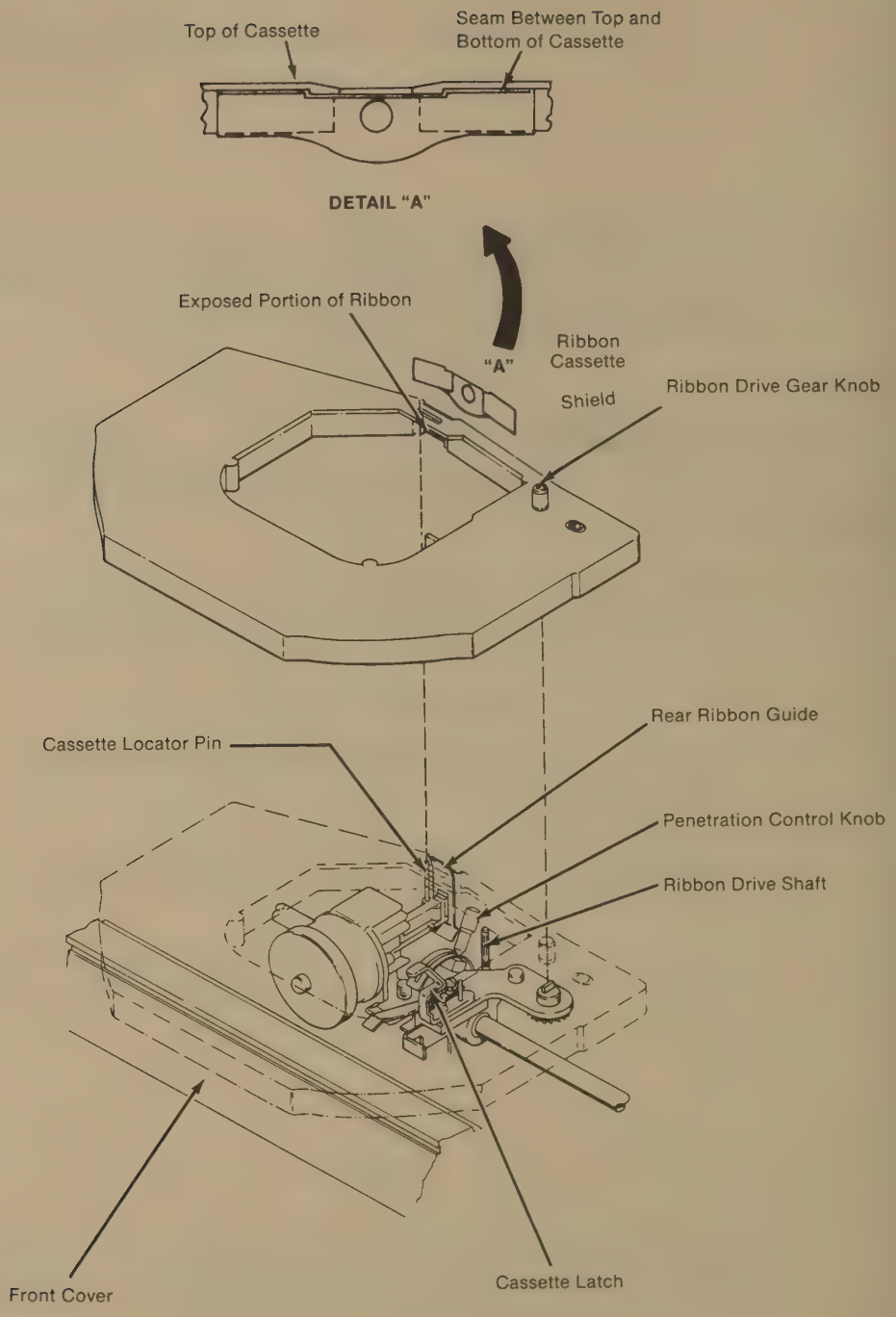


Figure 5-1. Ribbon Cassette Installation Locations

2. Move the print head to the center of the printer.

3. Loosen the penetration knob, as shown in Figure 5-2, turning it counterclockwise and moving it toward you as far as it will go.

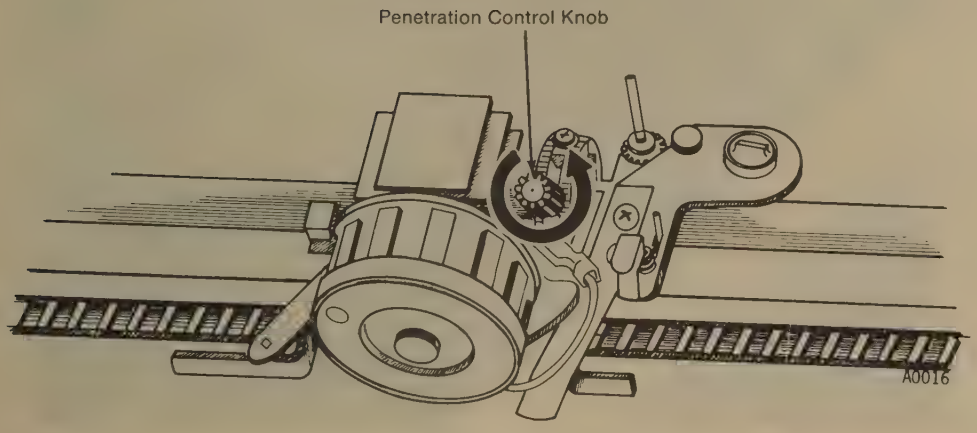


Figure 5-2. Loosening the Penetration Control Knob

4. Refer to Figure 5-1 and locate the cassette latch, cassette locator pin and rear ribbon guide on the printer.

5. Insert the cassette at an angle away from the platen, as shown in Figure 5-3. Make sure you place the exposed portion of the ribbon in front of the rear ribbon guide.

6. Snap the cassette into place on the cassette latch. The ribbon should remain in front of the rear ribbon guide.

7. Make sure the ribbon will feed freely by turning the ribbon drive gear knob clockwise several turns as shown in Figure 5-4. If the ribbon does not feed properly, try a new ribbon.

8. Tighten the penetration control knob by moving it forward as far as possible and turning it clockwise. If you have paper installed in the printer, adjust the knob accordingly.

Figure 5-3. Inserting the Ribbon Cassette

Figure 5-4. Turning the Ribbon Drive Gear Knob

Changing the Ribbon

If your printer is printing at the time you need to change the ribbon, press the HOLD PRINT switch on the operator panel to interrupt the printing. If printing is not in progress, turn the POWER ON/OFF switch to OFF.

To remove the ribbon cassette from the printer:

1. Move the print head to the center of the printer.

2. Loosen the penetration control knob by turning it counterclockwise and pull it toward you as far as it will go.

3. Push down on the cassette latch to release the ribbon cassette.

4. Grasp the cassette and remove it by tilting the platen side of the cassette toward you as you lift it out.

5. To load a new ribbon cassette, follow the steps outlined under the heading "Loading the Ribbon".

How to Load the Paper 6

First, Install the Paper Guide Rack

1. Refer to Figure 6-1 and locate the holes for the paper rack at the back of the printer.
2. Mount the paper guide rack in the holes as shown in Figure 6-1.

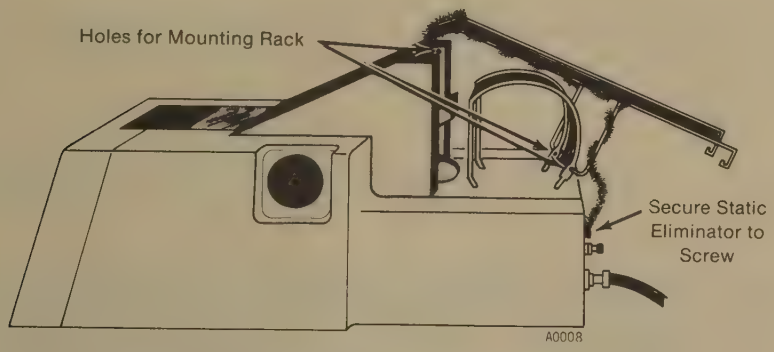


Figure 6-1. Mounting the Paper Guide Rack

3. Ground the static electricity eliminator to the left screw that holds the rear panel in place, as shown in Figure 6-1.

Selecting the Right Paper

The 2087 Matrix Printer uses continuous form fanfold paper with standard pinfeed holes along both sides, as shown in Figure 6-2. This type of paper maintains precise registration and is therefore the best for all types of jobs.

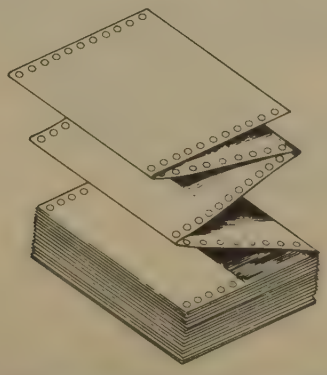


Figure 6-2. Continuous Form Fanfold Paper

For detailed paper specifications and recommendations for attaining best print quality and forms handling, see Appendix D. Note that Memorex does not offer printer paper or forms for sale.

WARNING

Staples can damage your printer. Do not put paper or forms with staples on them in your printer.

Paper Handling Controls

Before you load paper into the printer you should be familiar with the controls associated with the handling of paper. If you are installing paper for the first time, locate each control as shown in Figure 6-3 before you continue.

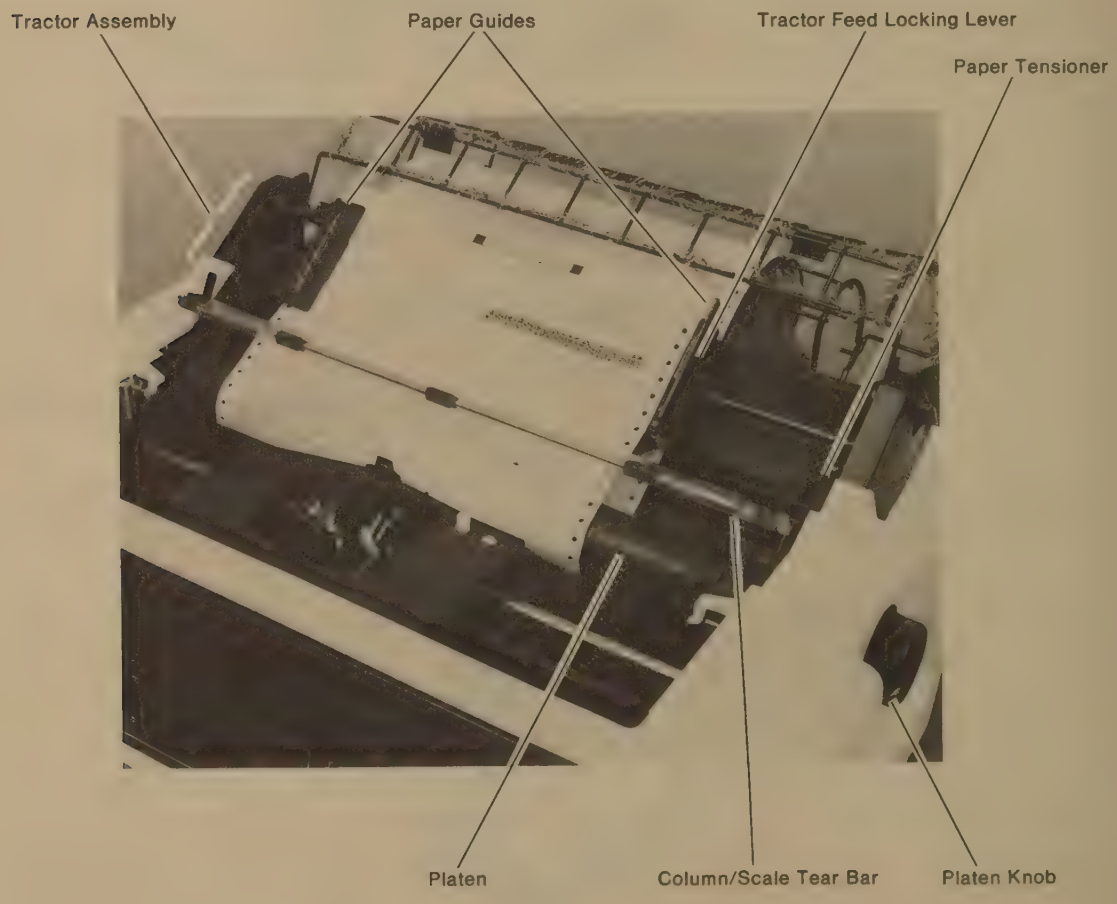


Figure 6-3. Paper Handling Controls on the 2087 Printer

Loading the Paper

This section outlines the two methods of loading paper: from the rear and from the bottom. Use the rear loading method for jobs using single part forms and for jobs that print superscript or subscript characters (operations that require the paper to be moved up and down). Use the bottom loading method for multipart forms.

CAUTION

If the printer runs out of paper while it is printing a job, press the HOLD PRINT switch to interrupt printing while you load the paper. Otherwise, turn the POWER ON/OFF switch to OFF to make sure the printer does not suddenly start printing while you're loading the paper.

Rear Loading Method

1. Loosen the penetration control knob by turning it counterclockwise and moving it toward you as far as it will go (see Figure 6-4).

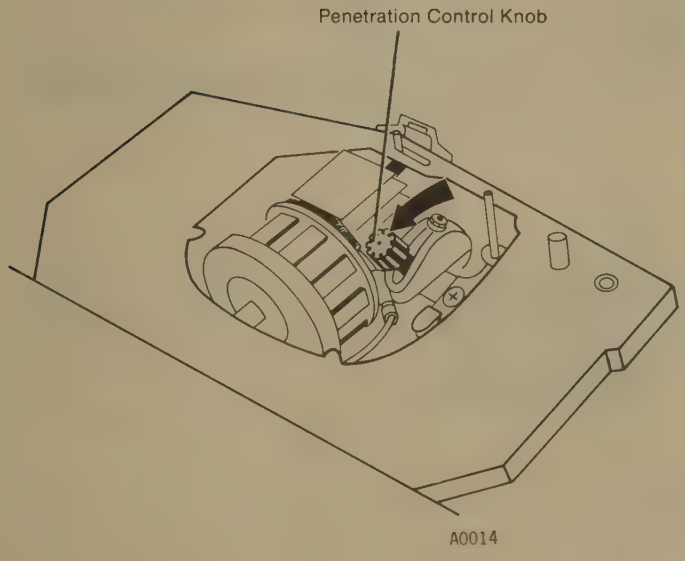


Figure 6-4. Moving the Penetration Control Knob Away from the Platen

2. Remove the flaps from a box of paper and place the paper on the floor underneath the optional 2087 Matrix Printer Stand. If you have a table instead of a printer stand, place the box of paper on the table behind the printer.

3. Flip the tractor assembly up, so that the back of the paper guides are facing you, as shown in Figure 6-5.

4. Feed the paper underneath the tractor assembly and back up again so that you can align the sprocket holes of the paper with the sprockets of the paper guides.

5. Open the left paper guide, insert the paper and close the guide. The left paper guide can be adjusted to help in aligning left-hand margins on preprinted forms.

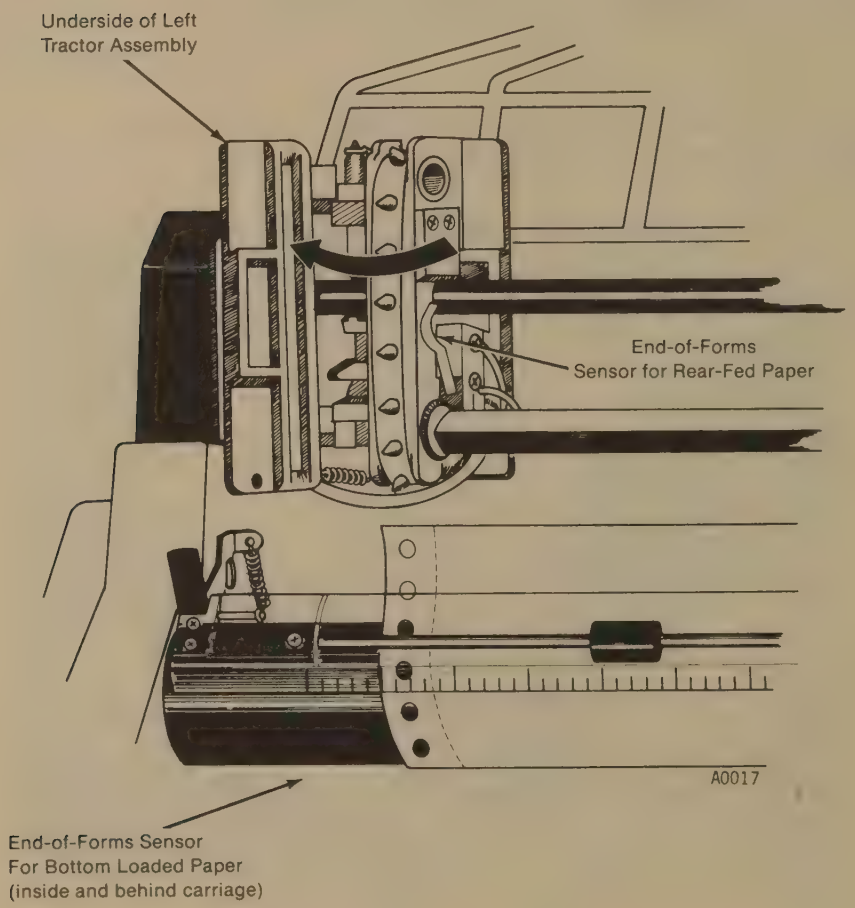


Figure 6-5. Left Tractor Assembly Flipped Up to Insert Paper

6. Release the tractor feed locking lever on the right paper guide and slide the guide to the left or right to accommodate the paper.

7. Invert the paper, close the paper guide and push down on the tractor feed locking lever to secure the right paper guide.

8. Once the paper is securely installed in the paper guides, flip the tractor assembly down into its original position.

9. Release the paper tensioner by rotating the knob downward as shown in Figure 6-6.

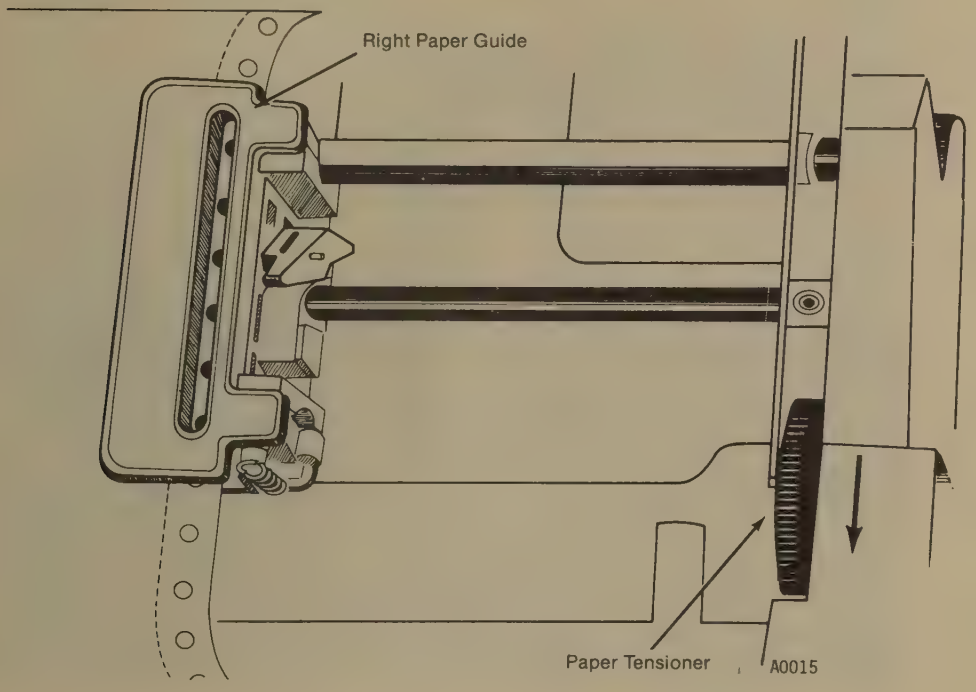


Figure 6-6. Releasing the Paper Tensioner

10. Feed the paper underneath the platen by turning the platen knob until you see the edge of the paper coming up between the print head and the platen. Grasp the paper and guide it behind the print head as you turn the platen knob until the paper reaches the top of the paper guides.

11. Go to step 5 of "Bottom Loading Method."

Bottom Loading Method

1. Loosen the penetration control knob by turning it counterclockwise and moving it toward you as far as it will go (see Figure 6-4).

2. If you have the optional 2087 Matrix Printer Stand, remove the flaps from a box of paper and place the box on the floor underneath the stand between the legs as shown in Figure 6-7.

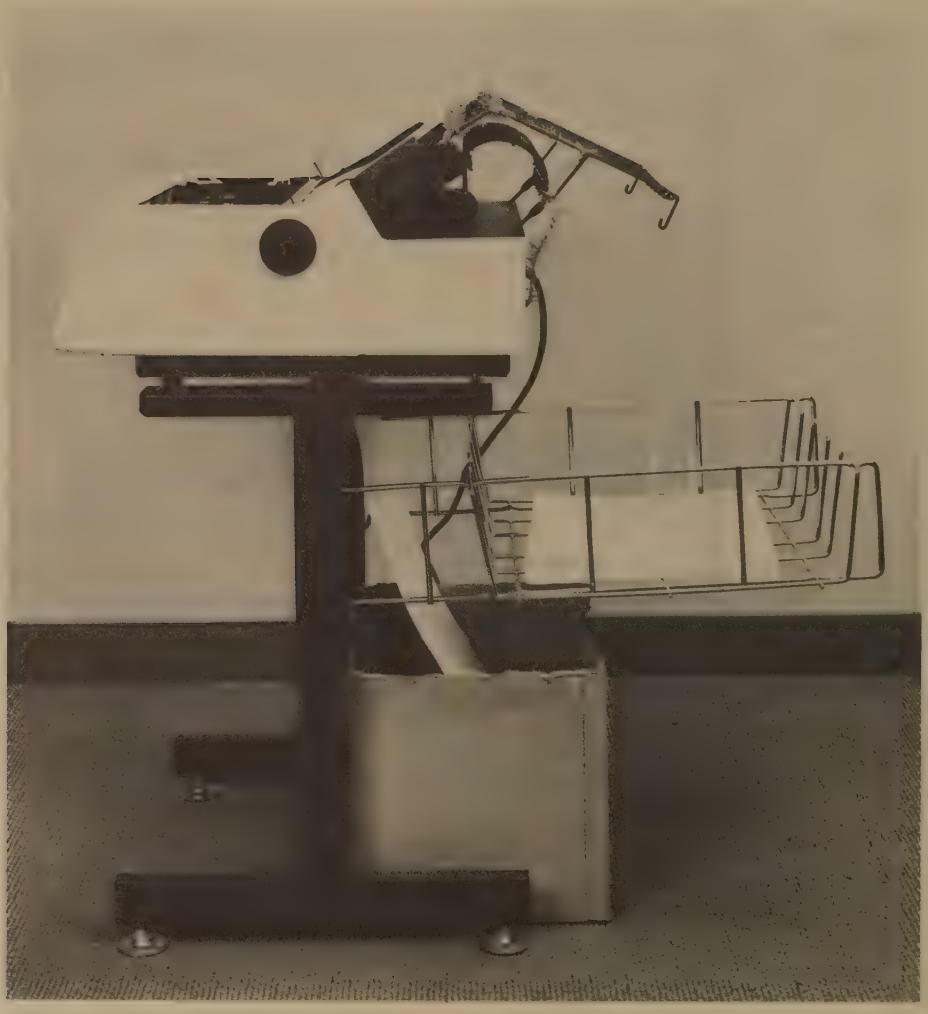


Figure 6-7. Loading Paper from the Bottom with the Optional Printer Stand

3. If you don't have a printer stand, place the paper where it will be most convenient to feed into the slot in the bottom of the printer (directly below the platen). This requires that there be a slot in the table.

4. Feed the paper through the slot below the platen until you see the paper coming up between the print head and the platen. (Make sure the paper goes under the column/scale tear bar.) Grasp the paper and pull it up until the paper reaches the top of the paper guides.

5. Open the top left paper guide, insert the paper and close the guide. Note that if you move the left paper guide to align the left-hand margin on a preprinted form, check to make sure the paper still moves across the End-of-Forms sensor for bottom-loaded paper. The sensor is located in the slot where the paper is fed through. See Figure 6-5 for the location of the sensor.

6. Release the tractor feed locking lever on the right paper guide and slide the guide to the left or right to accommodate the paper.

7. Make sure the holes in the paper are aligned so that the paper is parallel with the top of the printer.

8. Close the paper guide and push down on the tractor feed locking lever to secure the right paper guide as shown in Figure 6-8.

9. Make sure the paper in the box or on the table is aligned with the paper guides so that it will not jam as it feeds into the printer.

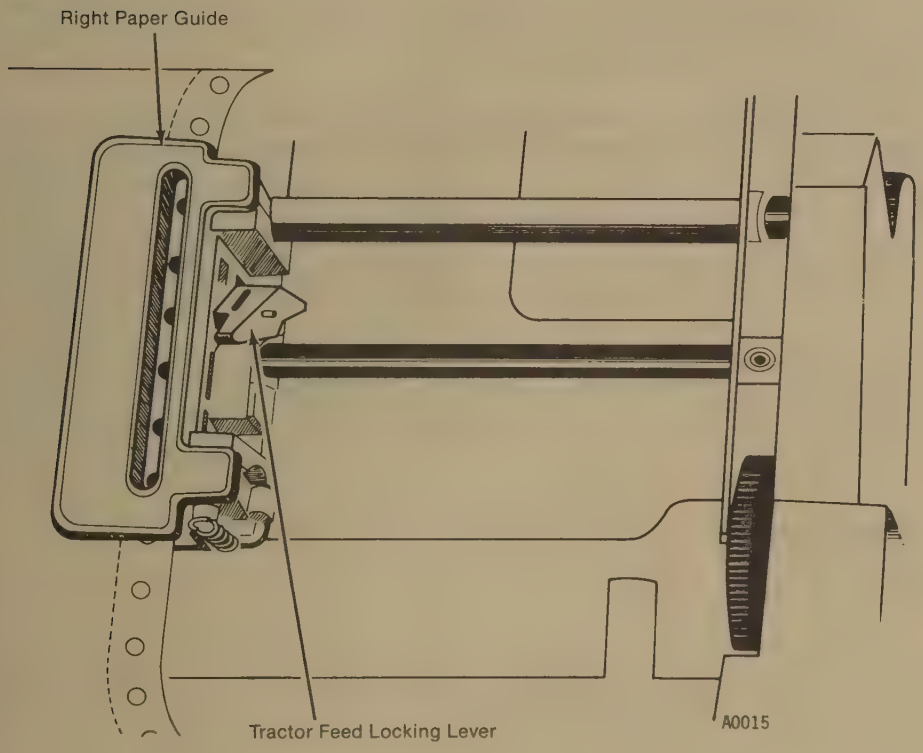


Figure 6-8. Securing the Tractor Feed Locking Lever

10. The paper tensioner knob tilts the tractor assembly back and forth. Adjust the tensioner so the paper will move smoothly over the platen.

    Rotate the knob up and down until the paper looks smooth and does not bulge away from the platen.

11. Carefully push the penetration control knob forward until the ribbon shield on the cassette just comes in contact with the paper. Turn the knob clockwise to tighten it in place.

End-of-Forms Sensors

There are two End-of-Forms sensors: One is located on the left tractor feed of the 2087 Printer which alerts the operator when rear-loaded paper runs out. There is another sensor located down inside the printer which alerts the operator when bottom-loaded paper runs out.

It is very important that you make sure the paper is properly loaded so that it passes over the proper sensor, depending on the paper loading method used. Otherwise, the printer may signal a false out-of-forms condition.

When the End-of-Forms sensor detects an out-of-forms condition, printing automatically stops, the audible alarms sounds and the Status Indicator displays the o.01 code.

If paper is not inserted in the printer within 60 seconds, the o.31 code displays on the Status Indicator and the audible alarm continues to sound. If you are not able to change the paper but wish to turn the alarm off, press the HOLD PRINT switch.

To reprint the contents of the printer buffer, press the REPRINT switch after loading new paper. When reprint operation is complete, select ENABLE PRINT to ready the printer.

Power-On Sequence and Test 7

After you have carefully performed all the procedures preceding this section, your printer is ready to be powered on.

1. Plug the power cord into the power outlet.
2. Set the POWER ON/OFF switch to ON.

Automatic Self-Test

Each time you set the POWER ON/OFF switch to ON, the printer automatically performs a Self-Test of its basic functions.

The Self-Test takes about 30 seconds to complete. During the test, the alarm beeps and the printer lights each LED and status character segment in sequence. Wait for the printer to complete the Self-Test and for the READY light on the operator control panel to come on.

The READY light on the operator control panel of the printer should come on at the end of a successful Self-Test. As a general rule, if the Self-Test runs successfully before the printer is connected to a controller but fails after being attached to the controller, you can assume that the problem is not in the printer.

Is the READY Light On?

Yes . . .

If the READY light came on and the printer is **not** connected to a controller, about two minutes later, when the Self-Test is complete, the following should occur:

1. READY light goes out
2. CU SIGNAL light goes out (printer is not connected to a control unit and therefore is **not** receiving an enable signal from the controller)
3. The Status Indicator displays code L.27 (to indicate that the printer is not receiving a CU signal)

At this point, you are ready to attach the printer to the controller. Go on to the next section, "Connecting the 2087 to a Controller."

When your printer is attached to a controller, the Self-Test is performed automatically every time you power on the printer. At the end of a successful Self-Test, the operator control panel of your printer should look like the one shown in Figure 7-1.

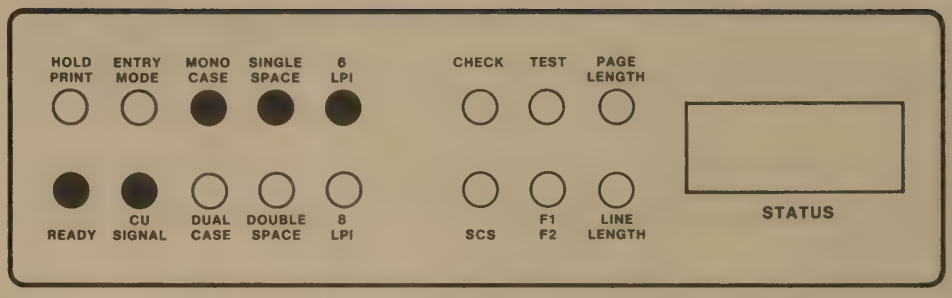


Figure 7-1. Control Panel Indicating Successful Self-Test

No . . .

1. If the READY light does not come on and none of the other lights come on, check to make sure the power cord is plugged securely in the power outlet and that the power outlet is working. If the READY light still does not come on, nor do any of the other lights, go to Section 10, "What to Do if You Have a Printer Problem."

2. If the READY light does not come on and the Status Indicator displays any codes that begin with the letter E, perform steps a through e below. You should make a list of the E (error codes) as they are displayed so that you can report them to your service representative. (See Section 10, "What to Do if You Have a Printer Problem," which contains a Problem Report for you to fill out and the Memorex Hotline number to call for service.)

   To display the Error Log:

   a. Press the HOLD PRINT switch on the operator control panel.

   b. Press the TEST switch. The Status Indicator displays S.00.

The printer is now in the Entry mode, which means that the numeric options on the middle ten switches of the operator panel are now in effect.

   c. Select Test S.01 by pressing the numeric switches for zero and one.

   d. Press the ENTER switch. The printer displays an error code, preceded by the letter E. Make a note of the code as it displays.

   e. The next E code will display automatically. Make a note of each code as it displays.

The test ends when the code S.01 is displayed. To scroll through the error codes again, press the ENTER switch. To exit the test, press the numeric switch for the number 9 twice (99) and press the ENTER switch.

Connecting the 2087 to a Controller

8

The 2087 Matrix Printer is only one part of your computer system. In order for your printer to receive data to print, it must be connected to a controller (control unit). The connection is made by attaching a coaxial cable from the control unit to the printer.

Your 2087 Printer can be attached to any of the following equipment:

1. Memorex 2076 Remote Cluster Controller (Remote attachment)
2. IBM 3274 Control Unit (Local or remote attachment)
3. IBM 3276 Control Unit (Remote attachment)
4. IBM 4341 Processor (Direct attachment)
5. IBM 4331 Processor (Display/Printer Adapter)

No matter which device you have, the procedure for connecting the coaxial cable is the same. Follow these steps:

1. Turn the POWER ON/OFF switch to OFF.
2. Bring the coaxial cable to your printer.
3. Locate the coaxial connector on the back of the printer as shown in Figure 8-1.
4. Push and lock (twisting clockwise) the cable connector into the printer connector as shown in Figure 8-1.

Figure 8-1. Attaching the Coaxial Cable to the Printer

The switches that you'll use to control the operation of the 2087 Printer are located on the operator control panel on the front of the printer. The membrane-type panel lets you select a switch with a touch of a finger. Most of the switch functions have to do with setting format parameters such as line and page lengths or directing the printer to run certain tests. Figure 9-1 shows the locations of the switches.

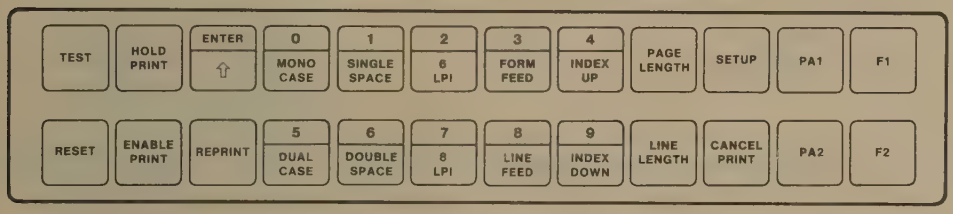


Figure 9-1. 2087 Control Panel Switches

Hold Print Mode

Most of the switches on the operator control panel can only be set while the printer is not printing. The HOLD PRINT switch is used to prevent printing or to stop printing in process. This non-printing state is referred to as the Hold Print mode. Most of the switches on the control panel can only be set when the printer is not printing, which means that the HOLD PRINT switch must be set prior to using certain switches.

Entry Mode

You can change the default format settings while in Entry mode. Pressing certain switches (PAGE LENGTH, LINE LENGTH, and TEST) will put the printer in Entry mode. This means that the switches with numbers on the top (locate the ten middle switches on the control panel in Figure 9-1) can now be used to enter numbers specifying certain format parameters such as page length and line length, or to specify certain test numbers.

An example of how to determine the page length you want for a particular job and how to set it is included in the PAGE LENGTH switch description in Section 9.

The LINE LENGTH switch when pressed also puts the printer into Entry mode and the middle ten switches with numbers can be used to change the line length from the standard default of 132 characters per line (which is also the maximum line length) to anything less than 132.

When the TEST switch is pressed while in the HOLD PRINT mode, the printer automatically goes into the Entry mode. The numbers on the middle ten switches can be used to enter selected test numbers or to set the top and bottom margins.

SCS Mode (Model 21)

If the SCS (SNA Character String) feature is functional on your 2087 Printer (Model 21) and if you are operating in the SCS mode (indicated by the SCS light being on), some of the switch settings on your operator panel may be overridden by the host computer or controller. The effects of SCS mode are noted in the individual switch descriptions that follow.

Default Switch Settings

When the printer is powered-on, certain default format parameters are already set. You can change them for your specific job by setting the appropriate switches on the operator panel. Each time the printer is powered-off and then on again, the following default settings will be in effect:

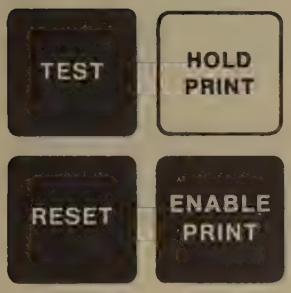
Default Setting	Meaning
MONO CASE	Prints in uppercase letters only
SINGLE SPACE	Prints with no blank line between printed lines
6 LPI	Prints six lines per inch
PAGE LENGTH	Prints 66 lines per page (including blanks)
LINE LENGTH	Prints 132 characters per line (including blanks)
Top and Bottom Margins	Printing starts on the first line (line number 1) and ends on the last line of the page (line number 66). See TEST switch description.

Switch Descriptions

While the printer is actually printing, there are only four switches that can be used: HOLD PRINT, TEST, INDEX UP and INDEX DOWN. All other switches can only be used when printing is stopped, which means the HOLD PRINT switch must be set in order to set these other switches. Incidentally, TEST, INDEX UP and INDEX DOWN switches can also be used in the Hold Print mode.

The function of each switch on the operator control panel and how to use it are fully described in the paragraphs that follow.

HOLD PRINT



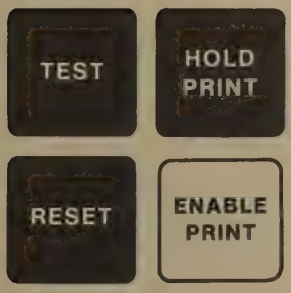
Press the HOLD PRINT switch to tell the printer to stop printing.

The HOLD PRINT light comes on

The READY light goes out.

To make the printer ready to print again, press the ENABLE PRINT switch.

ENABLE PRINT



Press the ENABLE PRINT switch to continue normal printing.

The HOLD PRINT light goes out.

The READY light comes on.

All error conditions must be cleared before this switch can function.

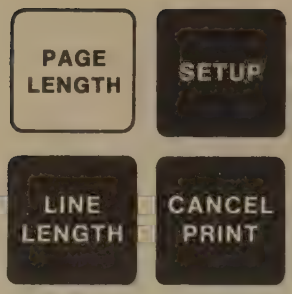
ENTER

The ENTER switch is used while in the Entry mode. The Entry mode is entered by pressing the PAGE LENGTH, LINE LENGTH, or TEST switch while in the Hold Print mode (only the TEST switch may also be pressed while printing).

The numbers on the middle ten switches of the operator panel are used to change top and bottom margins, page and line lengths and to select a specific Test number. The ENTER switch must be pressed after the number(s) has been pressed.

The entered number indicating new page length, line length, margins, or test number is displayed on the Status Indicator.

PAGE LENGTH



The default setting for page length is 66 lines at power-on. Press the PAGE LENGTH switch while in Hold Print mode to change the page length setting.

The ENTRY MODE light comes on.

The Status Indicator displays the current lines per page as a 3-digit number (066 for 66 lines per page).

You can now select a new page length in the range of 0 to 999. (Or, you may exit the Entry mode by pressing the ENTER switch.)

To determine the number of lines to select for your new page length, you must consider three things:

The length of the paper form in inches.

The number of lines you want to have print per inch.

The line spacing you want: single or double.

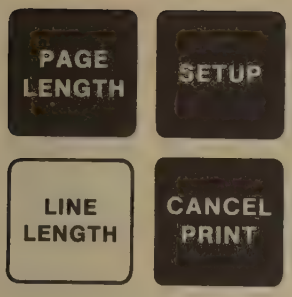
Page Length Setting Example

The default page length setting at power-on is based on a standard form length of 11 inches. The number of lines per inch (LPI) defaults to 6 LPI. Multiply 11 inches times 6 lines per inch and the total lines per page is 66, which is the default Page Length setting at power-on. In this example, we'll assume that the paper form length is 11 inches (279.4mm) and that you want 8 lines to the inch, single spaced:

1. You want to print 8 lines per inch so you set the 8 LPI switch.
2. You want single spacing, which is the default setting for the printer at power-on.
3. Multiply the paper length by 8 for single spacing (11 X 8 = 88). (For double spacing, set the DOUBLE SPACE switch and multiply the paper length by 4 (11 X 4 = 44).
4. Press the PAGE LENGTH switch and then enter the page length value as a three-digit number (enter 088, for example).
5. Press the ENTER switch.

The Status Indicator displays the new page length you selected.

Note: In SCS mode, this format setting may be overridden.



LINE LENGTH

The default setting for line length is 132 characters at power-on. Press the LINE LENGTH switch while in Hold Print mode.

The ENTRY MODE light comes on.

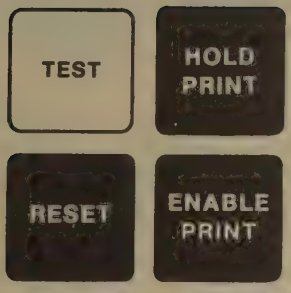
The Status Indicator displays the current line length setting as a 3-digit number.

You may now select a new line length setting in the range of 1 to 132, or you may exit the Entry mode by pressing the ENTER switch.

To select a new line length of 80, for example: 1) press the switch with the number zero (0) on top; 2) press the switch with the number eight (8) on top; then 3) press the switch with the number zero (0) on top. 4) Press the ENTER switch.

The Status Indicator displays the new line length you selected. (In this example, 080 displays.)

Note: In SCS mode, this format setting may be overridden.



TEST

If you press the TEST switch while the printer is still printing, the printer will go off line and perform the Self-Test.

The TEST light comes on.

If you press the TEST switch while in the Hold Print mode:

The ENTRY MODE light comes on.

You may now select numbered diagnostic tests as directed by the Problem Recovery Procedures in Section 10 or as directed by your Customer Engineer. The tests are selected by pressing switches that have numbers on them corresponding to the test numbers. The ENTER switch must be pressed to enter the numbers, which will then display on the Status Indicator.

To set top and bottom margins:

Press the HOLD PRINT switch and then press the TEST switch.

To set the top margin, select the numbers 96 and then select the line number at which you want printing to begin (see example).

To exit this feature, select numbers 99.

Press the ENTER switch.

To set the bottom margin, select the numbers 97 and then select the line number at which you want printing to stop (see Margin Setting example below).

To exit this feature, select the numbers 99. Press the ENTER switch. Press ENABLE PRINT.

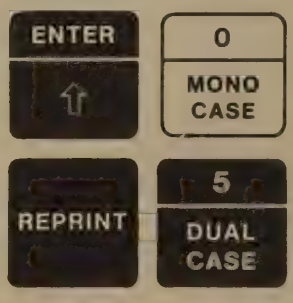
Note: The default settings at printer power-on are line number 1 for top margin and line 66 for bottom margin.

Margin Setting Example

If you want a 1-inch top margin and a 1-inch bottom margin on a standard page length of 11 inches, which is 66 lines per page, then a 1-inch margin equals 6 lines. You would want printing to begin on line number 7. After pressing HOLD PRINT, TEST and then selecting the numbers 96, enter the 3-digit value 007, and press the ENTER switch.

To set a one-inch bottom margin, subtract 6 lines (the number of lines per inch) from 66 (the total number of lines per 11-inch page) and you get 60, the line number where you want printing to end. If HOLD PRINT and TEST have already been pressed, select the numbers 97, then select the 3-digit value 060, and press the ENTER switch.

MONO CASE



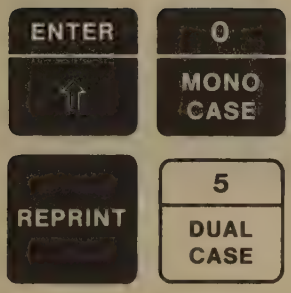
Tells the printer to print in uppercase only. This is the default setting at power-on. If you have selected DUAL CASE and wish to change to MONO CASE, press the HOLD PRINT switch then press the MONO CASE switch.

The MONO CASE light comes on.

The DUAL CASE light goes off.

Pressing this switch while in Entry mode causes a zero to display on the Status Indicator.

Note: In SCS mode, the printer operates only in Dual Case. Mono Case setting will be overridden.



DUAL CASE

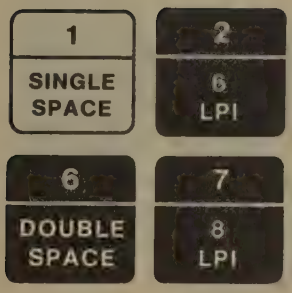
Press the DUAL CASE switch in the Hold Print mode to change from Mono Case to Dual Case (upper and lowercase).

The DUAL CASE light comes on.

The MONO CASE light goes off.

Pressing this switch while in Entry mode causes a five (5) to display on the Status Indicator.

Note: In SCS mode, the printer operates only in Dual Case.



SINGLE SPACE

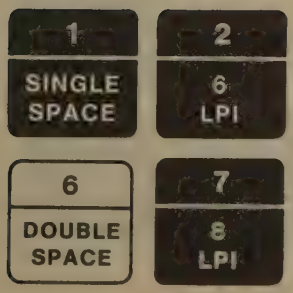
Tells the printer to print the job with no blank lines between printed lines. This is the default setting at power-on.

If you have selected DOUBLE SPACE and wish to change to single spacing, press the HOLD PRINT switch then press the SINGLE SPACE switch.

The SINGLE SPACE light comes on.

The DOUBLE SPACE light goes out.

Pressing the switch while in Entry mode causes a one (1) to display on the Status Indicator.



DOUBLE SPACE

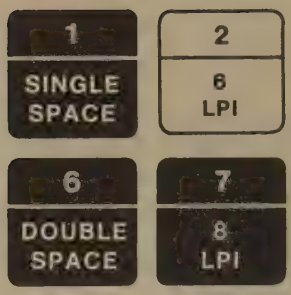
Press the DOUBLE SPACE switch while in Hold Print mode to tell the printer to print the job with a blank line between printed lines.

The DOUBLE SPACE light comes on.

The SINGLE SPACE light goes out.

Pressing this switch while in Entry mode causes a six (6) to display on the Status Indicator.

6 LPI



Tells the printer to print 6 lines per vertical inch. This is the default setting at power-on.

If you have selected the 8 LPI setting and wish to change to 6 LPI, press the HOLD PRINT switch then press the 6 LPI switch.

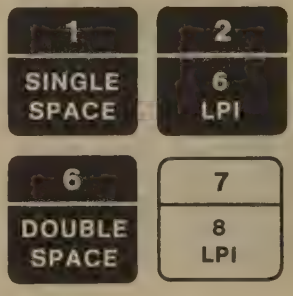
The 6 LPI switch comes on.

The 8 LPI switch goes off.

Pressing this switch while in Entry mode causes a two (2) to display on the Status Indicator.

Note: If you specify double spacing along with a setting of six lines per inch, you will actually get only 3 lines per inch.

8 LPI



Press the 8 LPI switch while in Hold Print mode to tell the printer to print 8 vertical lines per inch.

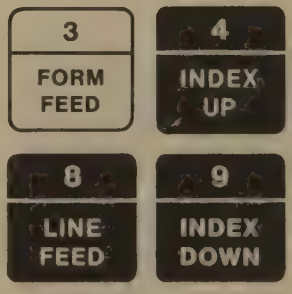
The 8 LPI light comes on.

The 6 LPI light goes off.

Pressing this switch while in Entry mode causes a seven (7) to display on the Status Indicator.

Note: If you specify double spacing along with a setting of eight lines per inch, you will actually get only four lines per inch.

FORM FEED

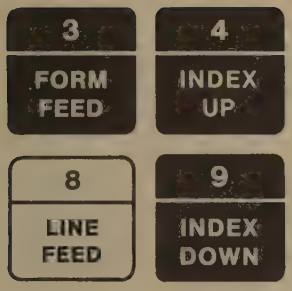


Press the FORM FEED switch while in Hold Print mode to tell the printer to advance the paper to the next top-of-form. The next top-of-form is based on the current page length.

Pressing this switch while in Entry mode causes three (3) to display on the Status Indicator.

Note: In SCS mode, the forms advance only as specified by the host computer or controller.

LINE FEED

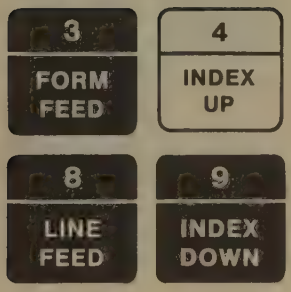


Press the LINE FEED switch while in Hold Print mode to tell the printer to advance the paper to the next line (l/6 or 1/8 of an inch). If the 6 LPI switch is on, the paper will advance 1/6 of an inch. If the 8 LPI switch is on, the paper will advance 1/8 of an inch.

To make the paper advance continuously, press the ENTER key immediately after pressing the LINE FEED switch To stop the line feed action, press ENTER again.

Pressing the LINE FEED switch while in Entry mode causes an eight (8) to display on the Status Indicator.

INDEX UP

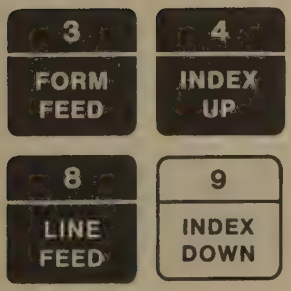


Press the INDEX UP switch while in Hold Print mode or while printing to feed the paper forward in increments of .00833 of an inch.

To feed the paper forward continuously, press the ENTER switch immediately after pressing the INDEX UP switch. To stop the feeding action, press ENTER again.

Pressing this switch while in Entry mode causes a four (4) to display on the Status Indicator.

INDEX DOWN



Press the INDEX DOWN switch while in Hold Print mode or while printing to feed the paper backward in increments of .00833 of an inch.

To feed the paper backward continuously, press the ENTER switch immediately after pressing the INDEX DOWN switch. To stop the feeding action, press the ENTER switch again.

Pressing the INDEX DOWN switch while in Entry mode causes nine (9) to display on the Status Indicator.

Note: Use of this switch is not recommended for bottom-loaded paper.

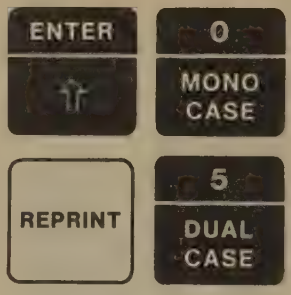
F1 and F2

The F1 and F2 switches are reserved for unspecified future options.

PA1 and PA2

These switches are referred to as Program Attention switches. If the SCS (SNA Character String) feature is operational on your printer, these switches can be selected while in the SCS mode to transfer printing control to the application program.

REPRINT



Press the REPRINT switch while in Hold Print mode to print the contents of the print buffer. This feature is useful if the printer runs out of paper while printing. If the printer is able to execute the command,

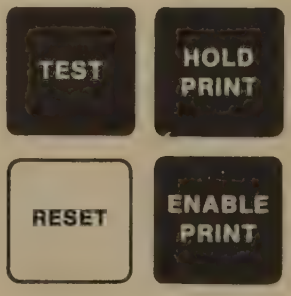
> The Status Indicator displays the code L.67 and the contents of the buffer are printed from the beginning.

If the contents of the print buffer cannot be printed,

> The Status Indicator displays the code o.09.

Note: The REPRINT switch is not active in SCS mode.

RESET



The RESET switch works only if the CHECK light is on (indicates an error has occurred). Pressing RESET causes the following to occur:

> The printer error status is reset.
>
> The CHECK light goes out.

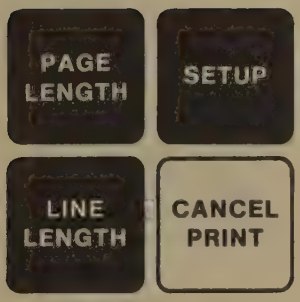
If the error condition was successfully cleared, the READY and CU SIGNAL lights come on.

SETUP

Press the SETUP switch while in Hold Print mode. The printer prints the letter "H" and, if the ENTER switch is pressed immediately thereafter, H's are printed repeatedly across the paper. No line feed occurs and printing continues until the ENTER switch is pressed again. This feature is useful for checking paper alignment.

The Status Indicator displays the current column position as the H's print across the page.

CANCEL PRINT



This switch is functional only if the SCS (SNA Character String) feature is operational on your printer. If the printer is in SCS mode, press CANCEL PRINT while in Hold Print mode to stop printing.

What the Lights Mean

HOLD PRINT

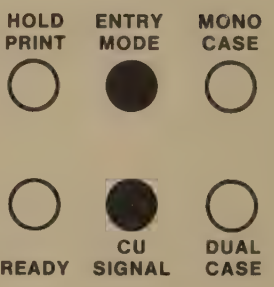
The HOLD PRINT light comes on when the printer is in Hold Print mode.

READY

The READY light comes on when the printer is ready to receive data from the controller. The light goes out when one of the following conditions occur:

- Printer enters Hold Print mode.
- Printer enters Test mode.
- Check condition occurs (error detected).
- Printer is powered-off.
- Printer runs out of paper.

ENTRY MODE



The ENTRY MODE light comes on when the PAGE LENGTH, LINE LENGTH or TEST switch is pressed. These switches automatically put the printer in Entry mode and shift certain switches to numeric mode.

CU SIGNAL

The CU (Control Unit) SIGNAL light comes on when the printer is in communication with the controller. If signals from the controller are not received approximately every 40 seconds, the light goes out after three time-outs.

MONO CASE

The MONO CASE light is on when the printer is set to print in upper case only. (Default setting)

DUAL CASE

The DUAL CASE light is on when the printer is set to print in upper and lower case.

SINGLE SPACE

The SINGLE SPACE light is on when the printer is inserting no blank lines between printed lines. (Default setting)

DOUBLE SPACE

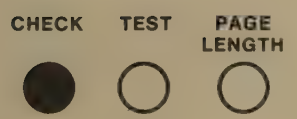
The DOUBLE SPACE light is on when the printer is inserting one blank line between printed lines.

6 LPI

The 6 LPI light is on when the printer is set to print six (6) lines per vertical inch. (Default setting)

8 LPI

The 8 LPI light is on when the printer is set to print eight (8) lines per vertical inch.



CHECK

The CHECK light comes on when an error condition occurs.

Printer stops printing.

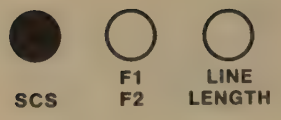
Status Indicator displays one of the following operational status codes: L.07, L.27 or L.52 (refer to Table A-1 to determine meaning of operational status codes.

If the Status Indicator displays a code preceded by the letter P, there may be a machine problem inside the printer. Fill out a Problem Report and call the Memorex toll-free number.

The CHECK light remains on until the RESET switch is pressed.

SCS

This light is on if your printer is equipped with the SCS (SNA Character String) feature.

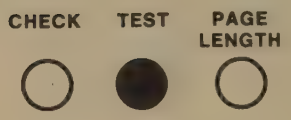


TEST

The TEST light comes on when the Self-Test or a selected diagnostic test is being run. It goes out when one of the following conditions occurs:

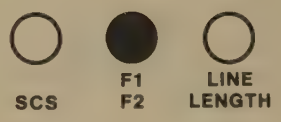
Printer completes the Self-Test or a selected diagnostic test.

The ENABLE PRINT switch is pressed.



F1 F2

This light is reserved for future applications not specified at this time.

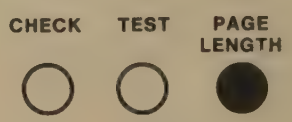


PAGE LENGTH

The PAGE LENGTH light comes on when the PAGE LENGTH switch is pressed to read or change the current page length setting.

Current page length setting is displayed on the Status Indicator.

Printer enters Entry mode.

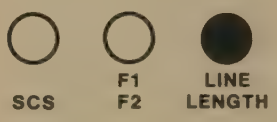


LINE LENGTH

The LINE LENGTH light comes on when the LINE LENGTH switch is pressed to read or change the current line length setting.

Current line length setting is displayed on the Status Indicator.

Printer enters Entry mode.



Status Indicator

You can monitor the operation of your printer by reading the various codes displayed on the Status Indicator. The Status Indicator is a three-digit LED display located in the center of the operator control panel. The information that may be displayed is as follows:

- Error code of any errors found during the Self-Test or during selected diagnostic tests. Write these error codes down and give them to your Customer Service Engineer to interpret for you.
- Status code when the printer requires operator attention (for example, when the printer runs out of paper).
- A list of 2087 Operational Status Codes and their meanings is provided in Table A-1.
- Current page length setting is displayed when you press the PAGE LENGTH switch.
- Current line length setting is displayed when you press the LINE LENGTH switch.
- Current column number of the letter H as it is printed across the page using the SETUP switch.
- Current test number selected while in the Hold Print or Test mode.

Audible Alarm

When the printer requires your attention, the audible alarm sounds ("beeps") at one second intervals. It continues to sound until you press the the HOLD PRINT switch. The conditions which the audible alarm will draw your attention to are:

- The printer is out of paper.
- An error is detected and the Check light is on.

The alarm makes a short beep when you press any of the switches on the operator control panel. If the switch you press cannot be set, the beep is longer (about one second). Also, during the Self-Test the audible alarm function is tested and the alarm beeps.

If the audible alarm beeps too loudly or too softly, you can adjust the volume. The alarm volume control is located on the rear panel of the printer, as shown in Figure 9-2.

Turn the alarm volume control clockwise to increase the volume and counterclockwise to lower the volume.

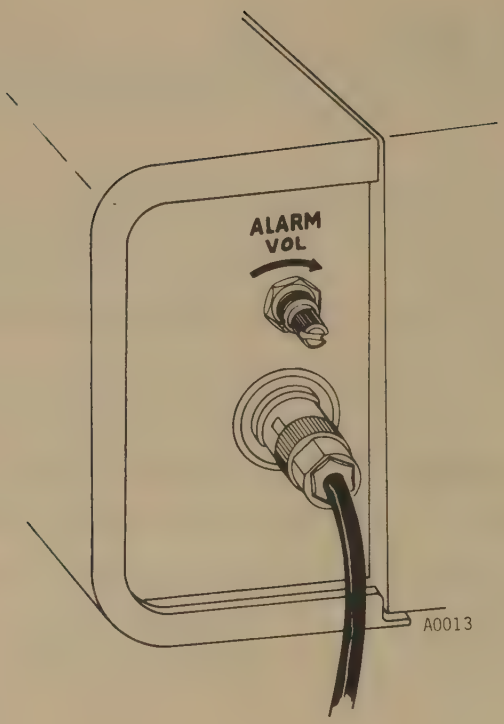


Figure 9-2. Audible Alarm Volume Control

What to Do if You Have a Printer Problem 10

Most of the problems you may encounter during normal operation of the 2087 Printer are referred to as operational problems, which can be fixed by the operator quite easily. When a problem occurs, look at the Status Indicator to see if a code is displayed. If there is a code, refer to Table A-1 which lists the most common operational status codes and their meanings.

What's the Problem?

The Problem Recovery procedures described in this section are designed to help you determine whether the problem is an operational one or a machine one. Machine problems require repair service.

If the Recovery Procedure for your problem symptom does not fix the problem or if you cannot find the symptom listed, fill out the Problem Report form at the end of this section and call the Memorex toll-free assistance number:

For California: 1-800-672-3576

All others: 1-800-538-8065

Keep a copy of your Problem Report and be ready to explain the problem and to perform additional procedures when your Memorex Customer Engineer calls you back.

How to Use the Problem Recovery Procedures

1. Find the symptom in the left-hand column of Table 10-1 that best describes your problem.
2. Follow the procedure opposite the symptom.

Table 10-1. 2087 Printer Problem Recovery Procedures

Symptom	What to Do
Strange noise, smoke, or smell coming from the printer.	1. Turn the POWER ON/OFF switch to OFF immediately! 2. Unplug the power cord. 3. If you can't unplug the power cord, turn off power to the printer at circuit breaker. 4. Call the Memorex toll-free number.
Printer not working or can't identify specific symptom.	1. Make sure the POWER ON/OFF switch is set to ON, the power cord is securely plugged into the outlet, and that the outlet is supplying power (you can check the outlet by plugging another electrical device into the outlet). 2. If the Status Indicator displays a code, look it up in Table A-1. If you don't find the code in Table A-1, fill out a Problem Report and call the Memorex toll-free number. 3. If no code is displayed and the power is on, run the following diagnostic test: a. Press the HOLD PRINT switch. b. Press the TEST switch. (Printer is now in Entry mode. Shifts switches with numbers on them to numeric mode.) c. Select Test S.00 (press the switch with the number zero on it, two times). The code S.00 appears on the display. d. Press the ENTER switch. If an Error code (any 2-digit code preceded by the letter E) displays during the running of Test S.00, write down the codes, fill out a Problem Report and call the Memorex toll-free number.

Table 10-1. 2087 Printer Problem Recovery Procedures (Continued)

Symptom	What to Do
	If no Error codes display during the S.00 test, return to the Hold Print mode by selecting the S.99 test: a. Select test S.99. (Press the switch with the number nine (9) on it, two times.) The code S.99 appears on the display. b. Press the ENTER switch. c. Press the ENABLE switch to enable the printer for online operation. d. Try to operate the printer as usual. e. If the printer is still not operating, fill out a Problem Report and call the Memorex toll-free number.
Status Indicator displayed one or more 2-digit codes preceded by the letter E.	Write down the code(s) and fill out a Problem Report. Call the Memorex toll-free number.
The printing is too light.	Make sure the ribbon is advancing: 1. Turn the POWER ON/OFF switch to OFF. 2. Grasp the print head and move it back and forth, watching the ribbon to make sure it is advancing. 3. Remove the ribbon cassette and inspect the ribbon. If it is worn or dry, replace the ribbon and try printing again. 4. If the ribbon is alright, check the penetration contol knob to make sure it's adjusted and tightened properly. 5. If printing is still too light, fill out a Problem Report and call the Memorex toll-free number.

Table 10-1. 2087 Printer Problem Recovery Procedures (Continued)

Symptom	What to Do
The printing is too heavy or smudged.	Readjust the penetration control knob: 1. Turn the knob counterclockwise to loosen it. 2. Move the knob as far away from the form as possible. 3. Move the knob forward again until the print head just touches the form. 4. Tighten the penetration control knob by turning it clockwise. If the printing is still too heavy or smudged, fill out a Problem Report and call the Memorex toll-free number.
The 8 LPI light and the DOUBLE SPACE light are on but the printer isn't printing four (4) lines per inch, as it should.	Fill out a Problem Report and call the Memorex toll-free number.
The 8 LPI light and the SINGLE SPACE light are on but the printer isn't printing eight (8) lines per inch, as it should.	Fill out a Problem Report and call the Memorex toll-free number.
The 6 LPI light and the DOUBLE SPACE light are on but the printer isn't printing three (3) lines per inch, as it should.	Fill out a Problem Report and call the Memorex toll-free number.
The 6 LPI light and the SINGLE SPACE light are on but the printer isn't printing six (6) lines per inch, as it should.	Fill out a Problem Report and call the Memorex toll-free number.
Print head does not move smoothly during operation.	Check the timing fence assembly to see if there is a build-up of white powder. Some powder is normal, but when printing stops be sure to clean the timing fence with a clean white cloth. If you do not see any powder and the print head still does not move smoothly after cleaning, fill out a Problem Report and call the Memorex toll-free number.

MEMOREX

2087 MATRIX PRINTER PROBLEM REPORT

Check the box next to the failing function and all statements that accurately describe the problem.

Strange noise, smoke or smell coming from the printer? Have you turned the power off and removed the power cord? ☐ Yes ☐ No

Date and Time_____

Reported By_____

Printer Location_____

Serial No._____

Printing Problems

Have you completed the routine maintenance and changed the ribbon cassette?

- ☐ Characters are missing or printed wrong.
- ☐ Prints wrong number of characters per line.
- ☐ Stops printing when it shouldn't.
- ☐ Starts and stops printing in the wrong place.
- ☐ Won't print at all.
- ☐ Won't print the following characters:

_____

- ☐ Prints but the Status Indicator always displays the following code(s):

☐☐☐ ☐☐☐ ☐☐☐

Paper Problem

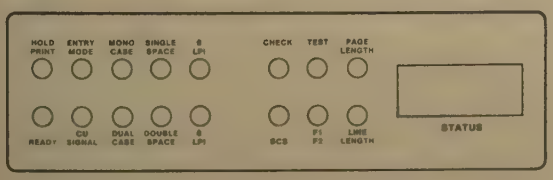
Is the paper loaded properly?

- ☐ Paper feeds continuously.
- ☐ Paper jams or rips.

Indicator Light Problem

Does the printer still print?

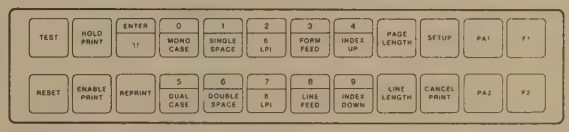
- ☐ None of the lights come on.
- ☐ Put an "X" in the circle of each light that doesn't come on.



Switch Problem

Can you still operate the printer?

- ☐ None of the switches work.
- ☐ Put an "X" over each switch that doesn't work.



Ribbon Cassette Problem

Is the ribbon cassette damaged?

- ☐ Ribbon won't feed properly.
- ☐ Ribbon won't rewind properly.

Power Problem

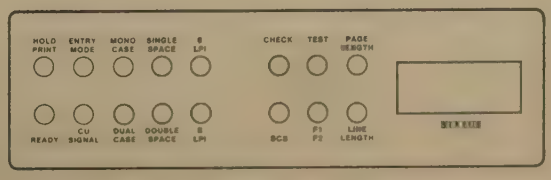
Is the power cord plugged into a good outlet?

- ☐ READY light doesn't come on.

Alarm Problem

Have you checked the volume control?

- ☐ Doesn't "beep" when any of the switches are set.
- ☐ Doesn't "beep" when the printer needs paper.
- ☐ "Beeps" all the time.
- ☐ Never "beeps."
- ☐ Volume is not adjustable.
- ☐ Put an "X" in the circle of each light that comes on without the alarm "beeping."



cut

MEMOREX

2087 MATRIX PRINTER PROBLEM REPORT

Check the box next to the failing function and all statements that accurately describe the problem.

Strange noise, smoke or smell coming from the printer? Have you turned the power off and removed the power cord? ☐ Yes ☐ No

Date and Time_____

Reported By_____

Printer Location_____

Serial No._____

Printing Problems

Have you completed the routine maintenance and changed the ribbon cassette?

- ☐ Characters are missing or printed wrong.
- ☐ Prints wrong number of characters per line.
- ☐ Stops printing when it shouldn't.
- ☐ Starts and stops printing in the wrong place.
- ☐ Won't print at all.
- ☐ Won't print the following characters:

_____

- ☐ Prints but the Status Indicator always displays the following code(s):

☐☐☐ ☐☐☐ ☐☐☐

Paper Problem

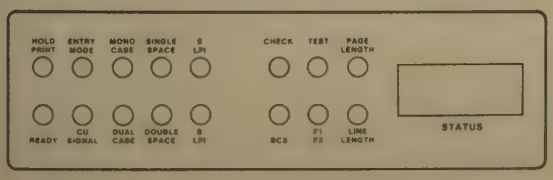
Is the paper loaded properly?

- ☐ Paper feeds continuously.
- ☐ Paper jams or rips.

Indicator Light Problem

Does the printer still print?

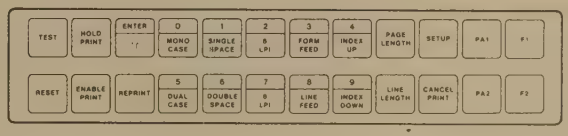
- ☐ None of the lights come on.
- ☐ Put an "X" in the circle of each light that doesn't come on.



Switch Problem

Can you still operate the printer?

- ☐ None of the switches work.
- ☐ Put an "X" over each switch that doesn't work.



Ribbon Cassette Problem

Is the ribbon cassette damaged?

- ☐ Ribbon won't feed properly.
- ☐ Ribbon won't rewind properly.

Power Problem

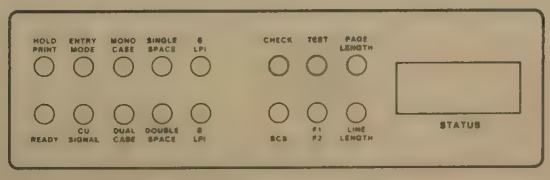
Is the power cord plugged into a good outlet?

- ☐ READY light doesn't come on.

Alarm Problem

Have you checked the volume control?

- ☐ Doesn't "beep" when any of the switches are set.
- ☐ Doesn't "beep" when the printer needs paper.
- ☐ "Beeps" all the time.
- ☐ Never "beeps."
- ☐ Volume is not adjustable.
- ☐ Put an "X" in the circle of each light that comes on without the alarm "beeping."



cut

MEMOREX

2087 MATRIX PRINTER PROBLEM REPORT

Check the box next to the failing function and all statements that accurately describe the problem.

Strange noise, smoke or smell coming from the printer? Have you turned the power off and removed the power cord? ☐ Yes ☐ No

Date and Time_____

Reported By_____

Printer Location_____

Serial No._____

Printing Problems

Have you completed the routine maintenance and changed the ribbon cassette?

- ☐ Characters are missing or printed wrong.
- ☐ Prints wrong number of characters per line.
- ☐ Stops printing when it shouldn't.
- ☐ Starts and stops printing in the wrong place.
- ☐ Won't print at all.
- ☐ Won't print the following characters:

_____

- ☐ Prints but the Status Indicator always displays the following code(s):

☐☐☐ ☐☐☐ ☐☐☐

Paper Problem

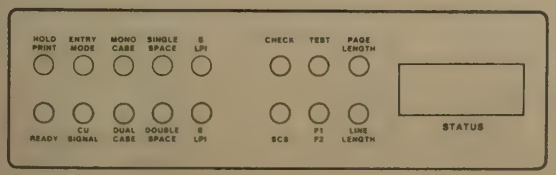
Is the paper loaded properly?

- ☐ Paper feeds continuously.
- ☐ Paper jams or rips.

Indicator Light Problem

Does the printer still print?

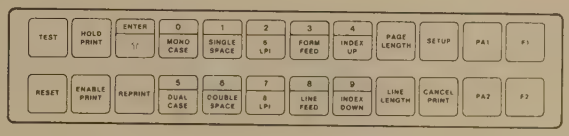
- ☐ None of the lights come on.
- ☐ Put an "X" in the circle of each light that doesn't come on.



Switch Problem

Can you still operate the printer?

- ☐ None of the switches work.
- ☐ Put an "X" over each switch that doesn't work.



Ribbon Cassette Problem

Is the ribbon cassette damaged?

- ☐ Ribbon won't feed properly.
- ☐ Ribbon won't rewind properly.

Power Problem

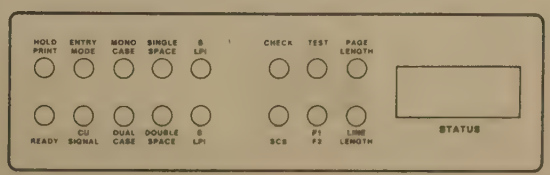
Is the power cord plugged into a good outlet?

- ☐ READY light doesn't come on.

Alarm Problem

Have you checked the volume control?

- ☐ Doesn't "beep" when any of the switches are set.
- ☐ Doesn't "beep" when the printer needs paper.
- ☐ "Beeps" all the time.
- ☐ Never "beeps."
- ☐ Volume is not adjustable.
- ☐ Put an "X" in the circle of each light that comes on without the alarm "beeping."



cut

Appendix A
2087 Operational Status Codes

This appendix is for you to reference when a code is displayed on the Status Indicator. The codes listed in Table A-1 appear during normal operation of the printer when a condition arises that an operator can easily fix. For example, when the printer runs out of paper the o.01 code is displayed on the Status Indicator.

If a code preceded by the letter P (stands for printer malfunction) or the letter E (stands for error code) appears on your display, fill out a Problem Report and call the Memorex toll-free number.

Table A-1. 2087 Operational Status Codes

Code	Description	Check Light On	Audible Alarm Sounds
L.07	The controller sent an illegal command to the printer. Fill out a Problem Report and call the Memorex toll-free number.	Yes	No
L.27	The printer has not received a CU (control unit) signal. Perform the following procedures: 1. Press the RESET switch. 2. Make sure the coaxial cable from the controller is securely connected to the 2087 Printer. 3. Make sure the controller and the host computer are up and running. 4. Make sure the coaxial cable is not over 1500 meters (4920) feet long, is terminated correctly, and is in good working condition. If possible, try attaching the printer to the controller with another cable you are sure is working.	Yes	Yes
L.52	The printer has not received an enable command from the controller for a while. If you have performed the procedures described for code L.27 and are sure that there are no problems with your coaxial cable, controller, or computer, fill out a Problem Report and call the Memorex toll-free number.	Yes	Yes

Table A-1. 2087 Operational Status Codes (Continued)

Code	Description	Check Light On	Audible Alarm Sounds
L.59	CANCEL switch was pressed. (This switch is operational only if your printer is equipped with the SCS feature.)	No	No
L.67	Buffer reprint in progress.	No	No
o.01	Operator attention required. The printer is out of paper and in the Hold Print mode. If paper is in the printer, make sure that it is loaded correctly and that the left tractor (where the End-of-Forms sensor is located) is closed.	No	Yes
o.06	Function selected on operator panel is not operational or the printer is not able to perform the requested function; for example, the printer cannot reprint while the printer is disabled.	No	No
o.08	Operator attention required. The printer was in the Hold Print mode longer than 12 minutes. Press the ENABLE PRINT switch to continue normal operation.	No	No
o.09	Function selected is not implemented in this release, or the feature is not allowed. For example, pressing the PA1 or PA2 switch when SCS feature is not installed.	No	No
o.31	Operator attention required. The printer is out of paper and awaiting your attention.	No	Yes
o.32	Operator attention required. After you load the paper, this message reminds you to press the REPRINT switch to print the contents of the printer buffer. Then press ENABLE, to continue normal operation.	No	No
P.xx	A status code starting with the letter P indicates that there is a problem inside the printer. Press the RESET switch and try printing. If a P.xx displays again, fill out a Problem Report and call the Memorex toll-free number.	Yes	Yes

Appendix B
Preventive Maintenance

The Memorex 2087 Matrix Printer is designed to consistently and reliably provide high-quality printed output. This section explains simple procedures that should be performed periodically to keep the printer in top condition.

What Not to Do

A good philosophy to adopt for performing preventive maintenance on the 2087 Printer is: "If the print quality is good and you have had no trouble, do only what is necessary to keep the printer clean."

Keep in mind that the 2087 Printer is a precision mechanical and electronic device. Take care not to damage components inside the printer when performing the preventive maintenance procedures. Remember that the warranty does not cover damage caused by the operator.

DO NOT

. . . Use harsh detergents or chemicals to clean any parts of the printer.

. . . Touch the print wires on the front of the print head.

. . . Insert objects down inside the printer.

. . . Place objects on top of the printer.

How Often to Perform Preventive Maintenance

Most of the maintenance procedures involve cleaning and lubricating certain printer parts at recommended time intervals. The suggested time intervals are only general guidelines; you should adjust them according to your use of the printer. For example, a printer used frequently to print on multipart forms will require cleaning more often than one used infrequently for printing on single-part paper.

Cleaning and Lubricating Materials Required

In order to clean and lubricate the printer properly, you will need to keep certain materials on hand. The following items can be obtained at most hardware stores:

- Small, long-handled soft-bristle brush.
- Lint-free cloth
- Mild detergent solution
- Light machine oil

Follow These Procedures

Refer to Figure B-1 to locate any parts of the printer that you are not familiar with.

WARNING

To avoid any possibility of injury or electrical shock, ALWAYS set the POWER ON/OFF switch to OFF and remove the power cord from the power outlet when performing the preventive maintenance procedures.

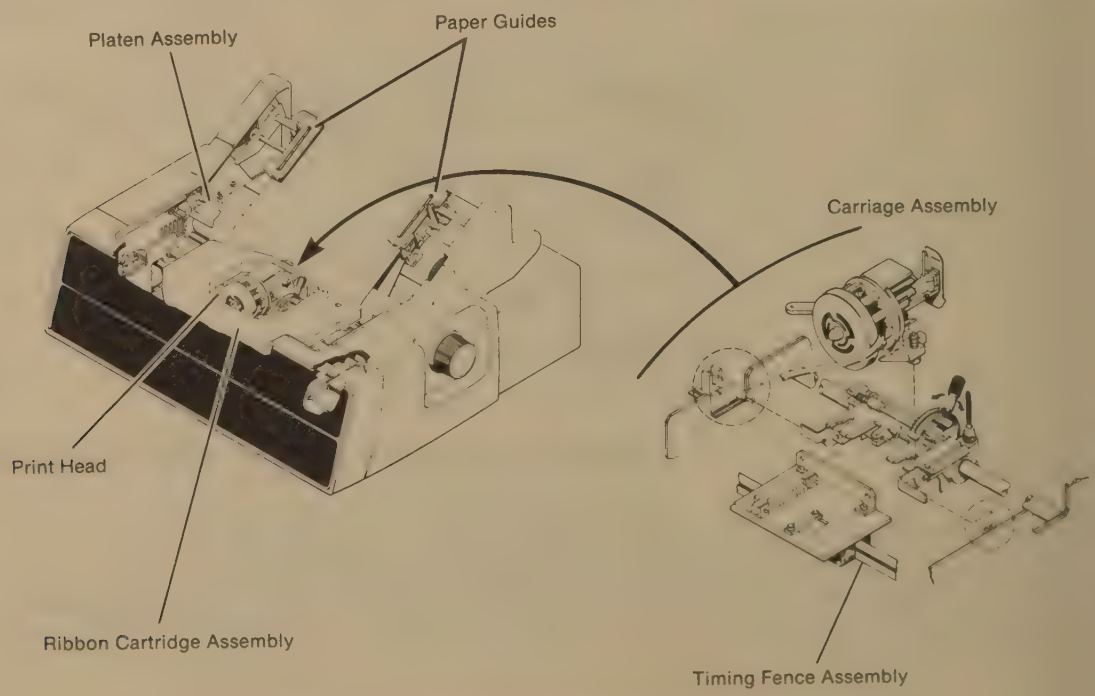


Figure B-1. 2087 Printer Preventive Maintenance Locations

Table B-1. Preventive Maintenance Procedures

Printer Part	How Often	What to Do
External Surfaces	As Required	Clean all external surfaces using a mild detergent and clean cloth.
Internal Components	Each Ribbon Change	Inspect the interior of the printer for loose wires, chafing of cables, and worn or damaged parts. DO NOT TOUCH THE WIRES AND DO NOT REMOVE THE REAR PANEL.
Print Head and Carriage Assembly	Each Ribbon Change	After removing the ribbon, use a soft-bristle brush to carefully remove dust and residue.
Printer in General	Every Six Months	Perform all of the above procedures. Clean the platen surface using a mild detergent and water, and a clean cloth. Use a vacuum cleaner with a soft brush attachment to vacuum the interior, taking care not to damage any components.
Print Head and Carriage Assembly	Every Six Months	Move the print head to the left side of the printer. Apply several drops of oil to a clean cloth and lightly rub the carriage guide bars to remove any build-up of residue. Move the print head to the right side of the printer and repeat the procedure.
Ribbon Cartridge	Each Ribbon Change	Inspect the ribbon cassette for proper ribbon movement.
Timing Fence	Every Six Months	Inspect the fence for the presence of a fine white plastic powder, which normally collects on the fence. Clean both sides of the fence using ONLY a clean, lint-free cloth.
Column Scale/ Tear Bar	Every Six Months	Using a mild detergent and a clean cloth, remove all dirt and ink from the bar.
Platen Assembly	Every Six Months	Remove dirt and ink from the platen with mild detergent and clean cloth.
Paper Guides	Every Six Months	Clean the upper and lower paper guide bars using a clean cloth.

Appendix C
How to Install the Optional Printer Stand

The Memorex 2087 Matrix Printer Stand makes paper loading from the rear or bottom of the printer quick and easy. This option will pay for itself by saving you time and protecting your printed copy.

First, Check the Printer Stand for Damage

Before you begin to assemble and install the 2087 Printer Stand, inspect the carton and parts you unpacked for signs of shipping damage. Look for dents, scratches, cracks, or broken parts. Notify the delivery company immediately if you find any signs of damage.

Compare the Parts List with the Parts Received

Compare the parts list shipped with your printer stand with the parts you received. If a part is missing, call the Memorex toll-free number (see Section 10, "What to Do if You Have a Printer Problem").

If you have all of the parts on the list, you are ready to assemble the stand. To assemble and install your 2087 Printer Stand, refer to Figure C-1 as you perform the procedures that follow.

1. Locate the two leg assemblies in Figure C-1 and place them on a flat surface with the threaded mounting holes facing up.

2. Position the universal skirt so the distance between the left and right legs is 457.2 mm (18 inches). The flat surface of the skirt must face you.

   Make sure the slotted holes on the skirt for the wire paper basket are located at the top of the skirt.

3. Attach the two leg assemblies to the skirt using four screws, lock washers and flatwashers from the assembly hardware kit.

4. With the wire paper basket on a flat surface, insert the two basket supports into the outside mounting tabs of the wire basket.

5. Insert the four leveling glides into the bottom of the leg assemblies and adjust the glides until the printer stand is level.

   Look for any signs of warping and if the stand will not stand level, do not install your printer on the stand. Call the Memorex toll-free number given in Section 9.

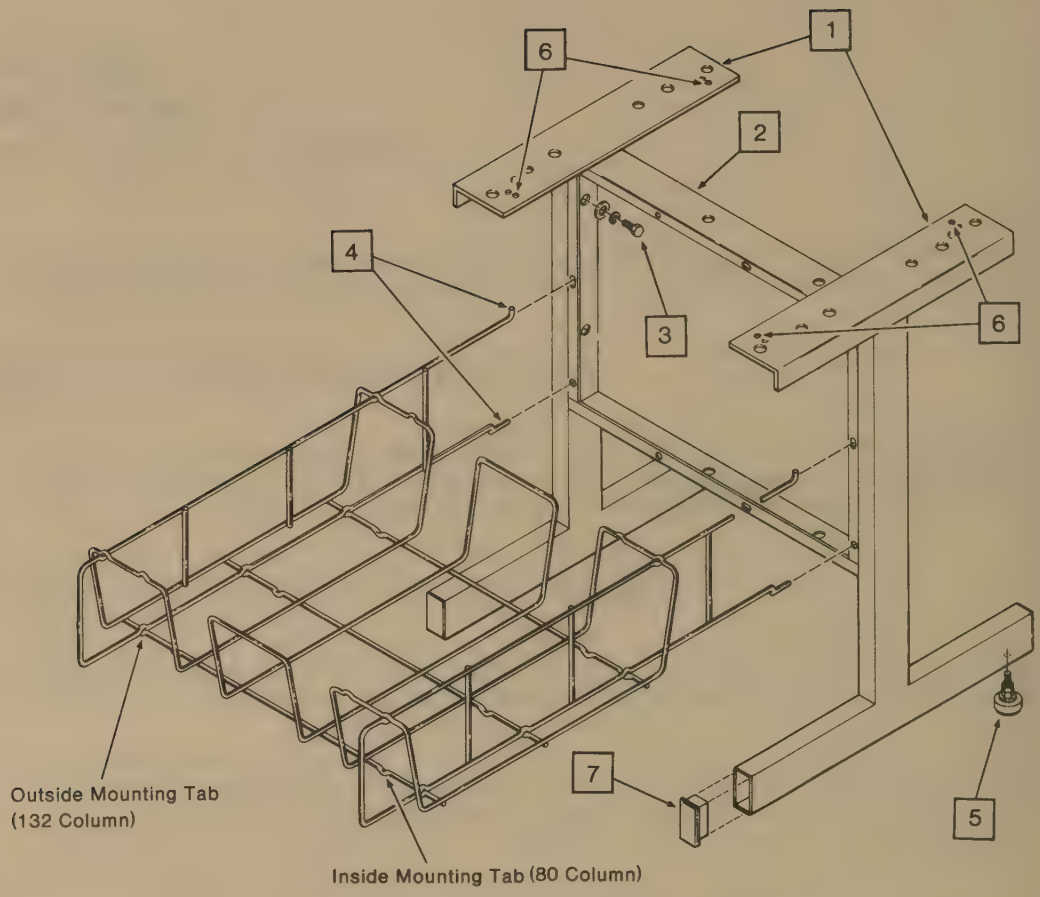


Figure C-1. Printer Stand Assembly

WARNING

Installing a printer on a warped printer stand can damage your printer and void your warranty.

6. When the stand is fully assembled and you are certain it is stable and level, have two persons lift the printer and place it on the top rails of the printer stand so that the four rubber feet align with the holes.

   Using four screws, lockwashers and flatwashers from the printer mounting hardware kit, attach the printer to the stand.

7. Put a bumper guard on each foot of the printer stand.

Appendix D
Paper Specifications

The Memorex 2087 Matrix Printer uses tractor-fed fanfold single-part or multipart forms. The paper you select should conform to the specifications listed in this appendix; otherwise, degraded forms handling may occur.

Sprocket Holes

The forms must have sprocket holes punched along both margins 0.25 ± .03 in (6 mm ± 0.7 mm) from the paper edge to the hole center lines.

The distance between hole center lines must be 0.5 ± .005 in (12.7 ± 0.05 mm) nonaccumulative in any five-inch (127 mm) length. The diameter of the holes must be 0.156 ± .005 in (4.0 mm ± .1 mm).

The distance across the sheet between sprocket hole center lines must be uniform within 0.015 in (0.381 mm). The two top and two bottom drive holes (four total holes per sheet) may be oversize to as large as .200 in (5.08 mm) diameter to permit ring binding the completed printout.

Fastening

Multipart forms must be fastened with crimps every two inches (50.8 mm) along both edges of the forms. Crimps must not come closer to the fanfold than .50 in (12.7 mm). Each crimp must have four prongs: two which enter the forms and the carbons, and two which enter the forms only. Forms over five parts must be crimped both on the sides and the edges.

Metal staples cannot be used.

Forms Thickness

Maximum forms thickness specifications are as follows:

In the print area: 0.018 in (.457 mm) for four parts of 12 lb (45 g/m^2), one part of 15 lb (56 g/m^2, five carbons of 7 lb (16.5 g/m^2).

Over the crimp fastenings in the pinfeed margins of the forms: 0.030 in. (762 mm).

Paper Weights

Paper weights are plus or minus 5%.

- Single part: 15 lb to 20 lb bond (56 g/m² to 75 g/m²)
- Multipart:

	Paper Weight	Carbon Type
2-part	15 lb (56 g/m²) bond	#7 (16.5 g/m²) tissue
3-part	15 lb (56 g/m²) or 12 lb (45 g/m²) bond	#7 (16.5 g/m²) tissue
4-5 part	12 lb (45 g/m²) bond last copy should be 15 lb (56 g/m²)	#7 (16.5 g/m²) tissue (over 4 parts, use #5 tissue)

Forms Size

Minimum width: 4 in (102 mm)

Width for 80-column printer: 9-1/2 in (241 mm)

Width for 132-column printer: 14-7/8 in (378 mm)

Length: maximum form length should not exceed 11-2/3 in (296.4 mm)

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